Fife-Tidland GmbH
GLOBAL WEB MANAGEMENT SOLUTION
guiding inspection slitting winding

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GB

InPrint
Operating Instructions

Application:
standard

InPrint.Deckblatt.fm

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1 INTRODUCTION

About these operating instructions

These operating instructions are designed to facilitate commissioning, operating and maintaining the InPrint web inspection system and to provide important information for proper use of the system.

These operating instructions are directed to both the system construction master as well as the operator who uses the InPrint system in production. The operating instructions must be read and used by all persons who have the responsibility of installing, operating and maintaining the InPrint system.

Note:
These operating instructions include a functional description of the **non-motorised**, **motorised** and **programmable** version of the InPrint system.
Functions that can only be used in the motorised version of the InPrint system or involve a functional limitation of the non-motorised version are marked with an * in these operating instructions.
**** designates functions that are only available in the programmable version.**

Proper use

InPrint is a system for inspecting the print image on a running material web. The inspection system is built into rotating printing presses or similar systems for this purpose.

The InPrint system offers all the basic functions that are necessary for web inspection tasks:

- An electromechanically adjustable zoom lens for adjusting the size of the image or the field of view
- Electromechanically adjustable aperture and sharpness to achieve optimal reproduction of images.
- A variable split screen to allow you to compare the current image optically with a reference image
- Still image for more precise inspection of an individual image
- Automatic scrolling for systematic observation with larger image areas in the direction of web motion or perpendicular to it*

The InPrint web inspection system must be used for its intended purpose and must be maintained in a state with no technical problems. Any other uses of the InPrint system must be previously discussed with and approved by Fife-Tidland GmbH.

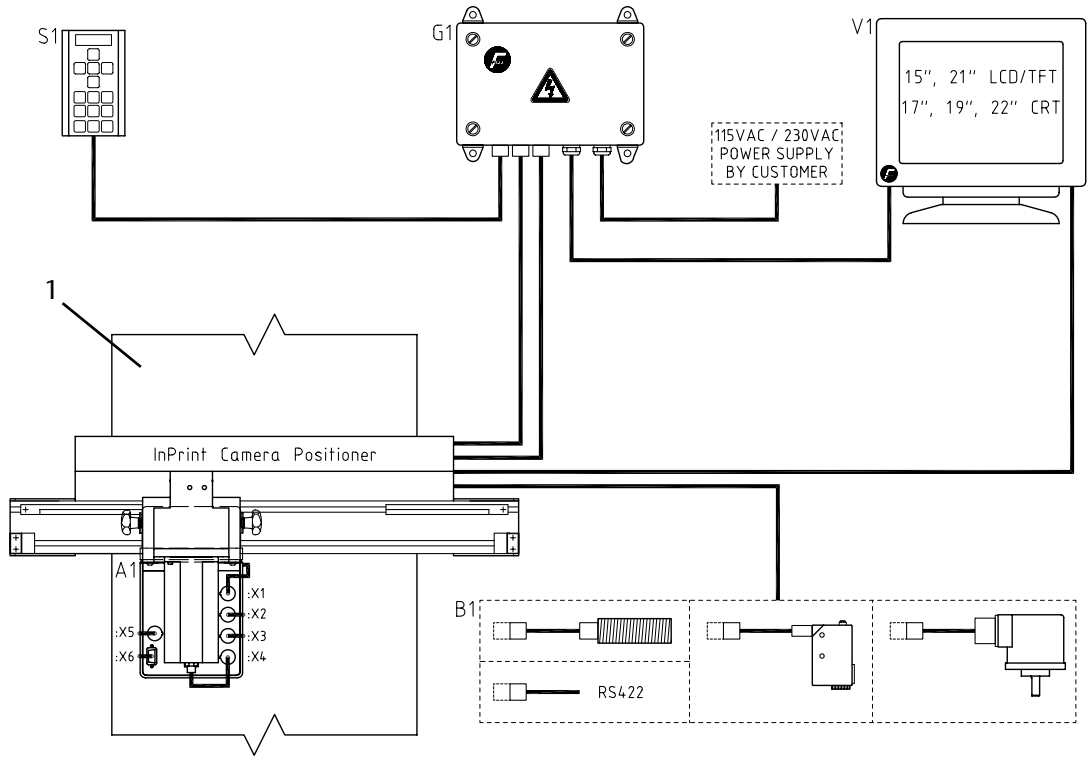
Options

Mounting the InPrint system on a manual or motorised positioning track, remote control units, various synchronization sensors and monitors make it possible to adjust this web inspection system to many different kinds of applications. A version with an extended field of view is also available.

Mode of functioning

Fig. 1.1 shows an example of a system diagram for an InPrint web inspection system with its possible components and connections.

The camera unit (A1) is used to take images of the material web that is to be inspected (1). A strobe lamp integrated into the camera unit illuminates that part of the material web. The camera unit can be positioned manually or by motorised control over the material web. A sensor (B1) synchronises recording of images with the moving material web. The display of the print image that is being observed appears on a monitor (V1). External keyboards (S1) make it easier to operate the InPrint system. The individual components of the InPrint system are connected to a central power supply (G1).



A1 Camera unit with positioning track (manual or motorised)
B1 synchronization sensor
G1 Power supply
S1 Remote control (optional)
V1 Monitor
1 Material web

Fig. 1.1: System diagram of an InPrint web inspection system

Operating modes

The InPrint system has three different operating modes:

Manual (M)

The active field of view can be selected with the arrow keys on the keyboard and remains in this position.

Autoscan mode (A/AB)*

The system continuously cycles in a pattern through a configured area while displaying images of its current position. Two sets of settings (A and AB) can be individually configured, activated, and deactivated.

Programmable track mode (P/PB)**

The system cycles through a sequence of pre-programed positions and displays images from each of these positions.

Two sets of settings (P and PB) can be individually configured, activated, and deactivated.

Functional overview

Table 1.1: Functional overview

Function	Description
Brightness	Lens control of iris, digital gain
Field of view	Lens control of zoom, digital zoom
Sharpness	Lens control of focus, digital edge enhancement ON/OFF
Gamma correction	0.2 ... 4.0
Split screen	3 sets of settings, freely configurable split screen with up to 8x8 grid of mixed image
Image rotation	0°, 90°, 180°, 270°
Mirroring	ON/OFF
Freeze	ON/OFF
Exposure mode	3 sets of settings possible
Black/white level calibration	Automatic calibration for the image sensor
Idle flash	ON/OFF, automatic after max. 60 sec.
Autoscan mode*	2 sets of settings possible, 4 modes available for selection
Programmable track mode**	2 sets of settings possible
Image synchronization	Image mark sensor, gear tooth sensor, rotary encoder
Screen display	Six lines, for operation and configuration, language oriented
Function keys	Keys 1 through 6, key 8 and keys 10 through 14 are freely configurable (Keys 10 through 14 starting with software version 1.008)
Keyboards	Up to 16 keyboards can be connected (optional accessories)
Languages	5 standard languages
Password protection	Available

2 SAFETY INSTRUCTIONS

Symbols

The following safety symbols are used in these operating instructions:

Warning of dangerous area

Refers to general hazards and possible damage to the device

Warning of danger - crushing

Refers to danger of injury caused by crushing

Warning of danger - cutting

Refers to danger of injury caused by cutting

Warning of dangerous electrical voltage

Refers to the presence of high electrical voltages and corresponding risk of injury or death

Important instructions on using the InPrint system

In order to operate the InPrint system safely, the system must be properly transported and stored and must be professionally installed and placed in operation. Operation in accordance with intended purpose and careful maintenance will ensure a long service life for the device.

Only persons who are acquainted with the installation, commissioning, operation and maintenance of the system and who possess the necessary qualifications for their activities may work on the InPrint system.

Please note the following:

- The content of these operating instructions
- The safety instructions printed on the unit
- National, state and local requirements for accident prevention and environmental protection

Hazards

The following points must be observed without exception to ensure safety in working with the InPrint system.

Installation and commissioning

- An InPrint system that is damaged must not be installed or put into operation.
- All assembly tasks on the InPrint system must only be performed when there is no electrical power in the system.
- The InPrint system must only be placed in service if it has been securely mounted mechanically.

- Electrical connections on the InPrint system should always be made or disconnected while there is no electrical power in the system. There is a danger of electrical shock and damage to the InPrint system.
- Only replacement parts that have been approved by Fife Tidland should be used.

Operation and maintenance

- You should avoid looking directly at the flashes produced by the InPrint system.

- Do not grasp moving parts or anything close to them while the device is in operation. There is a danger of being crushed between the camera and the positioning track.

- There is a danger of being cut by the web edge caused by the web material or by the movement of the web itself.
- Maintenance jobs on the InPrint system must only be performed when the machine is stopped and the power is turned off.

3 CONTROL PANEL AND MENU TREE

Keyboard

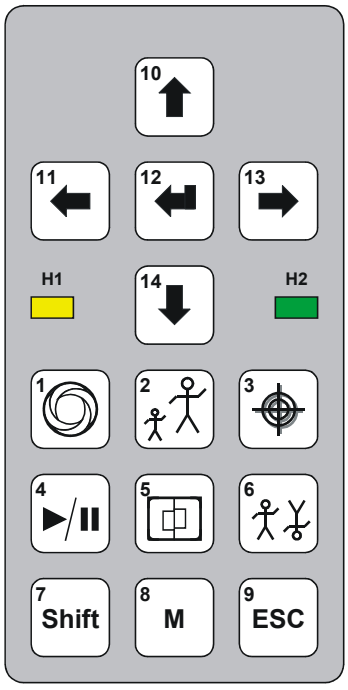


Fig. 3.1: InPrint keyboard

The InPrint system keyboard shown in *Fig. 3.1* is identical in its arrangement and function to those in the camera unit and remote control units. The one exception is that LEDs H1 and H2 are only present in the camera unit.

Table 3.1: Keys and their functions

Key	Function
1	• Adjust brightness
2	• Adjust field of view
3	• Adjust sharpness
4	• Freeze ON/OFF
5	• Select split screen mode
6	• Select image rotation
7 Shift	• Shift key for extended key functions
8 M	• Select operating mode
9 ESC	• Cancel view or entry
10	• Move the image up
11	• Move the image to the left* • Reduce value
12	• Menu selection • ENTER - confirm entry
13	• Move the image to the right* • Increase value
14	• Move image down

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Extended key functions

The key 7 (Shift key) provides the option of configuring frequently used operating functions from the user menu to the keys 1 through 6, key 8 or keys 10 through 14 as a second assignment (keys 10 through 14 starting with software version 1.008, see also *4.05 Shift keys assignment, page 5-7*).

Note:
All items in the menu tree that are identified by an S in *Section 12 Appendix - Menu tree* can be configured to extended key functions.

To select an extended key function, first press the key 7 (Shift key) and then press the desired function key.

The *Table 3.2, page 3-2* shows the assignment of these keys in the factory configuration (keys 10 through 14 not configured).

Table 3.2: Extended key functions

Key	Function
7 Shift -> 1	Select exposure mode
7 Shift -> 2	Select operation language
7 Shift -> 3	Teeth per repeat (gear tooth sensor)
7 Shift -> 4 ▶/❚❚	Idle flash ON/OFF
7 Shift -> 5	Save reference image
7 Shift -> 6	Mirroring ON/OFF
7 Shift -> 8 M	Set inspection position
7 Shift -> 9 ESC	Exit the user menu Note: This key assignment cannot be changed.

LEDs

LEDs H1 and H2 are located on the camera keyboard. They identify the following items of information:

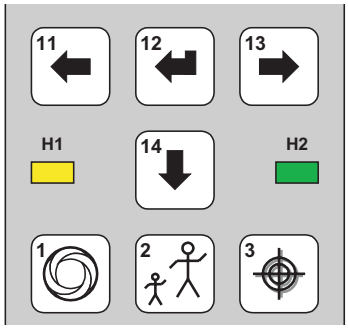


Fig. 3.2: InPrint LED H1 and H2

H1

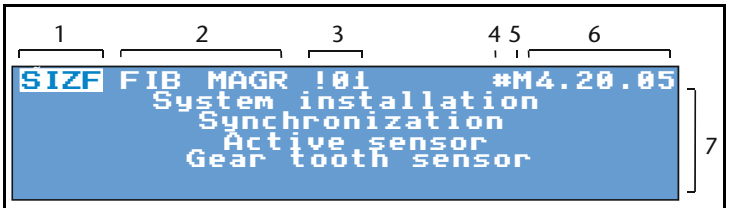
- Continuous: A key on a connected keyboard is being pressed
- Flashing: Short circuit detected in the monitor cable
- Flashing rapidly: Hardware error
  Please contact the Service Department.

H2

- Continuous: System ready
- Flashing: Start phase of the InPrint system

Screen display

The InPrint system uses a six-line screen display as a visual aid for operation and configuration.



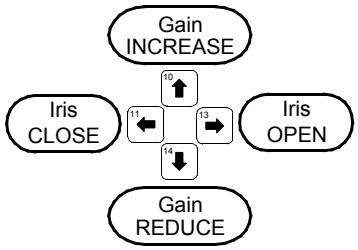
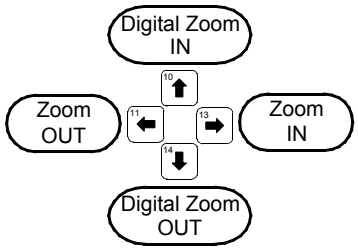
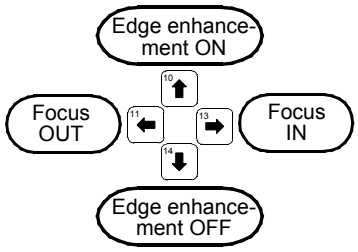
1 Function ID
2 Operating status
3 Program position** or error display
4 Marking for password protection
5 Operating mode
6 Menu ID
7 Menu area

Fig. 3.3: Example of an InPrint user menu

1: Function ID

- Display of a previously activated key (keys 1, 2, 3 or 8)
- The arrow keys (keys 10, 11, 13, 14) always have the corresponding functions assigned to them (*Table 3.3, page 3-4*)

Table 3.3: Function ID

Display	Function	Key assignment
5	Shift key pressed	see under *Extended key functions, page 3-2*
I	Brightness (iris)	
Z	Field of view (zoom)	
F	Focus/Edge enhancement (focus)	

2: Operating status

- Each place in this display describes the current status of a function of the InPrint system that has been set in the user menu (see *Table 3.4, page 3-5*)

Table 3.4: Operating status

Pos.	Display	Function
1	– F	Freeze
2	– I	Idle flash
3	– A B C	Active split screen mode
4	↑ → ↓ ←	Selected image rotation
5	– M	Mirroring
6	– A B C	Active exposure mode
7	I G E C	Trigger sensor: I Image mark sensor G Gearwheel sensor E Rotary encoder[1] C Sensor combination[1] [1] Flashes when the web is stopped. Continues flashing for a few seconds after the web starts up
8	R	Track referencing* R flashing (see *Track referencing*, page 5-16*)

– Function not activated

3: Display of the current program position/error display**

- If an InPrint system with a programmable track cycles through a program, the current program positions are displayed at this point.
- If there is an error present in the InPrint system, the corresponding error code is displayed at that point. This display takes precedence over the program position display.

Table 3.5: Error display

Display	Description
!01	DRAM-1 error
!02	DRAM-2 error

4: Marking password-protected menu entries

- All menu items that have been locked by a password are marked by an "#" before the menu ID in the screen display (see *Password, page 3-7*)

5: Operating mode

- The operating mode selected with the key 8 is displayed

Table 3.6: Operating mode

Display	Function
M	Manual
A	Autoscan mode A*
AB	Autoscan mode B*
P	Programmable track mode A**
PB	Programmable track mode B**

6: Menu ID

- Each item in the menu tree has a unique ID assigned to it. This makes it possible to precisely track each step in the menu tree of the InPrint system (see *Menu structure, page 3-7*).

7: Menu area

- Display of selected items in the menu tree during an operation process

Status line

A status line appears on the monitor to confirm activation of main functions. It shows elements 1, 2 and 5 of the screen display.

1 Function ID
2 Operating status
5 Operating mode

Fig. 3.4: Example of an InPrint status line

When functions are performed, the status line automatically disappears from the display after a few seconds.

To check the system settings, you can press the SHIFT key (key 7) to turn the status line on and off.

Menu structure

The entire InPrint system menu tree is described in *Section 12 Appendix - Menu tree*.

The InPrint system is arranged in five groups:

1. Operation:
   Contains all standard functions the user needs to operate the InPrint system during regular ongoing operation
2. Set up image parameters:
   Contains all functions for setting up the display of the image on the monitor
3. Set up scroll parameters:
   Contains all functions for setting up adjustable camera processes
4. System installation:
   Contains all functions that are required to install an InPrint system in a printing press
5. Service:
   Contains all functions required for diagnostic purposes or factory assembly of the InPrint system in the factory

Navigating the menus

Table 3.7, page 3-8 describes navigation inside the user menu

Menu ID

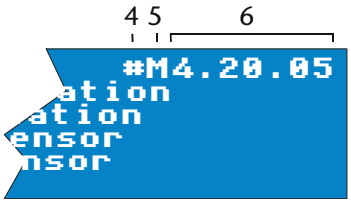


Fig. 3.5: Menu ID

Each menu item has its own unique ID (item 6 in *Fig. 3.5*). Because of this, each step in the InPrint system menu can be completely retraced. The first digit describes the menu group (see *Menu structure, page 3-7*) and all subsequent digits describe the respective menu item within the group.

Password

For problem-free operation with the InPrint system, we recommend you lock important menu items of the user menu with a password to prevent unauthorised employees from making improper settings. All menu items that can be locked are marked by a "#" before the menu ID in the on screen display (item 4 in *Fig. 3.5*).

Table 3.7: Navigating the menus

Key	Function
12 ↵	• Open the user menu • Switch to the next menu level • Enter - Confirm and save entries
9 ESC	• Return to the last menu level • Close the user menu • Discard entries without saving
11 ←	• Move to the left within a menu level • Reduce value
13 →	• Move to the right within a menu level • Increase value
7 Shift -> 9 ESC	• The menu can be completely closed at any point, All changes that have not been saved will be discarded

Notes on the menu description

All functions explained in these operating instructions are always described based on the default state of the InPrint system. The default state is present if the InPrint system has been turned on initialisation of the system has been completed and the user menu or status line is not visible.

7 Shift **and** 9 ESC

You can also reach the default state at any time by pressing the SHIFT and 9 keys (see *Table 3.2, page 3-2*).

Some items are identified by an M in the menu tree (see *Section 12 Appendix - Menu tree*). The settings in these menu items can only be changed if the InPrint system is in “Manual”. Because of this, all menu items in these operating instructions are described on the assumption that the system is initially in "Manual" mode (see item 5 in *Fig. 3.5*).

4 INSTALLATION

Transport and storage

- The device must be secured to prevent it from slipping during transport.
- The device must be stored in a cool, clean and dry place.
- The device must not be stored in the vicinity of powerful magnetic fields. The electronic components of the device may be damaged.

Included with delivery

- InPrint camera unit
  The model name, serial number and part number are on the housing.
- Operating instructions

Option

- positioning track
- Synchronization sensor
- Power supply
- Monitor
- Remote control units
- strobe lamps
- Cable

Mounting

Mounting location

- Permissible ambient temperature 5°C to 45°C
  Max. relative humidity 90%, non-condensing

  The maximum permissible temperature must be reduced starting at a height of 1000m above sea level:
  45°C to 1000m
  42°C to 2000m
  39°C to 3000m

- Dirt affects the optical quality
- Protect from vibrations
- Not in the vicinity of strong magnetic fields
  The electronic components may be damaged.
- Protect from falling objects:
  The device can be damaged or an unintended switching process could be initiated.

Mechanical fastening

The camera and positioning track are pre-assembled when they leave the factory and can be installed into the printing press together.

Please note!
All assembly tasks on the InPrint system must be performed when there is no electrical power in the system.

Assembly tasks and mechanical settings must only be performed when the printing press has been stopped and has been secured from being turned on again.

The positioning track is fastened on either side (or on one side for the one-sided positioning track) with four screws each in the printing press. The mounting brackets have oblong holes in them to facilitate more precise alignment of the camera. They make it possible to adjust the distance between the InPrint system and the web. For the position of the fastening drill holes in the machine frame, please refer to the installation drawing in the system documentation.

Note:
Care should be taken that the positioning track is mounted so that it is not twisted or subjected to tension. Otherwise, all bolts on the positioning track side of the fastening bracket must be loosened and then tightened again when the positioning track is in its final position.

The distance from the camera to the web must be equally great on the right and left of the positioning track. Please refer to the installation drawing in the system documentation for the correct distance from the camera head to the web.

For the motorised version of the InPrint system:

Please note!
The limit switches must be checked before commissioning of the motorised version of the InPrint system. If the limit switches are adjusted incorrectly, the result may be that the InPrint system does not detect the end of the positioning track and damage is caused to positioning track or the InPrint system itself (see *4.15.10/4.15.15 Adjusting limit switches*, page 4-9*).

Please note!
A powerful motor is used to move the motor on the positioning track. It cannot be moved by hand, even when the power is turned off. There is a danger of the user being injured and of damaging the drive belt.

Electrical connection

Earthing

The InPrint system is already equipped with an earthing wire when it leaves the factory. The connection is made on the camera side to an earthing screw designed specifically for this purpose. The length of this line matches the other lines connected to the camera. Because of this, it can be directly connected with the earth of the printing press in most cases. For longer positioning tracks, use a screw point close to the cable carrier connection as the transfer point for a customer-installed extension of the earthing line to the printing press earth.

Power supply voltage

The InPrint system does not have a power switch. Because of this, the device must be integrated into the power circuit of the machine to be turned on and off. If a separate shutoff switch is required for the InPrint system, an appropriate switch must be provided.

Please note:
The InPrint system does not have any EMERGENCY OFF switch. Depending on the existing conditions or legal requirements it may be necessary to install an additional Emergency Off switch between the “Power Supply Box” and the printing press power supply that can be used to disconnect the InPrint system from the power network in the event of dangers.

Please note!
It is absolutely essential to ensure that electrical connections on the device are always made or disconnected while there is no electrical power in the system. Otherwise the system may be damaged.

The wiring of the accessory must also be in conformity with the system diagram in the system documentation. Only accessories approved by Fife-Tidland GmbH may be used.

Installation of the remote control unit

Remote control units are available as handheld devices and as panel-mount devices for permanent mounting.

Dimensions, information on fastening the remote control unit and optional accessories are described in the system documentation.

Handheld device IPRC-021H / IPRC-022H

The handheld unit can be used in any position. If the handheld device is not required, it can be safely kept on a wall support (magnetic strips). It is also possible to permanently install the handheld unit on a suitable surface. An optional accessory is delivered for this purpose or can be ordered in addition from Fife-Tidland.

Panel-mount device IPRC-021P / IPRC-022P

The panel-mount device is mounted in a cutout of the control panel. An optional accessory is delivered for this purpose or can be ordered in addition from Fife-Tidland.

Wiring

Remote control units should connected to the InPrint system with the cables included with delivery by Fife-Tidland according to the system diagram in the system documentation.

If you are using multiple IPRC-022H/P remote control units (series-connection devices), they can be connected with each other in any order.

The last remote control unit in the series forms the bus termination. At least one remote control unit with the designation IPRC-021H/P (terminal device) should be used or an IPRC-022H/P series-connection device should be configured as a terminal device (see the drawing in the system documentation).

Synchronization sensor

To ensure the most precise synchronization of images with the moving web possible, the InPrint system offers the option of connecting different sensor types to the system depending on the system and conditions.

Rotary encoder

Function:

A rotary encoder is a rotating sensor that turns synchronously with an application roller of the printing press. It returns information about the starting position of the image and the speed of rotation.

If the printing press's central drive control unit is able to emulate rotary encoder signals, they can be used by the InPrint system with an RS422 connection. In that case there is no need to mount a separate synchronization sensor.

The rotary encoder as a synchronization sensor offers the highest precision when taking images.

Installation:

Please note!
To prevent the possibility of injuries, installation and mechanical adjustments to the sensor may only be performed while the printing press is stopped and has been secured against being turned back on.

The rotary encoder must be installed mechanically so that it turns synchronously with the print cylinder, i. e. one revolution of the rotary encoder must correspond exactly to one print image or to a whole number of print images.

Gear tooth sensor HDI-1

Function:

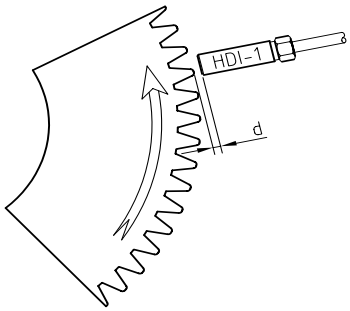
The HDI-1 gear tooth sensor is a Hall effect sensor that responds to differing magnetic resistances. It is therefore suitable for scanning gear teeth of gear wheels that can be magnetised (for example those made of steel or iron).

Since the information about the length and position of the image cannot be derived from the sensor signal, the number of teeth that pass the sensor per image must be communicated to the InPrint system. The position within the image is lost after the system is turned off (see also *4.20.10 Teeth/repeat (gear tooth sensor), page 5-2*).

If the length of a print image does not directly correspond to a whole number of teeth seen by the sensor, then the image repeat seen by the system may drift with respect to the print image. For this reason, it is possible to extend the system's image repeat over several print images, which may result in a more stable image display.

Installation:

Please note!
To prevent the possibility of injuries, installation and mechanical adjustments to the sensor may only be performed while the printing press is stopped and has been secured against being turned back on.



d Switching distance

Fig. 4.1: HDI-1 sensor

The HDI-1 is aligned to the gearwheel so that the longitudinal axis of the sensor intersects the gearwheel shaft vertically. The switching distance „d“ from the sensor surface to the gearwheel depends on the type of sensor, the size of the teeth and the material. The rotational alignment of the sensor about its axis must also be noted (see also the installation instructions and drawing for the HDI-1 in the system documentation).

Adjustment:

To allow for optimal sensing of the teeth, the distance to the gearwheel must be adjusted for the gearwheel sensor.

Function

The *Gear tooth sensor* menu contains help for adjusting the sensor.

Menu

To select menu *4.15.05, Gear tooth sensor*:

Fig. 4.2: Keystroke sequence to Menu 4.15.05, Gear tooth sensor

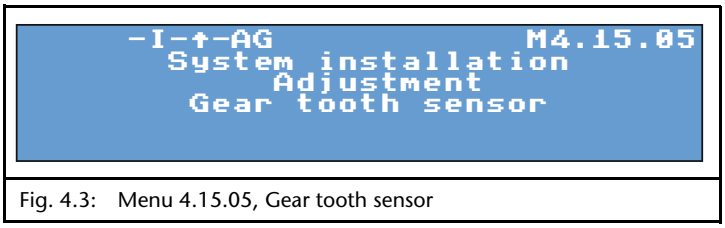


Fig. 4.3: Menu 4.15.05, Gear tooth sensor

- Enable the menu for viewing

Adjustment

Please note!
To prevent the possibility of injuries, installation and mechanical adjustments to the sensor may only be performed while the printing press is stopped and has been secured against being turned back on.

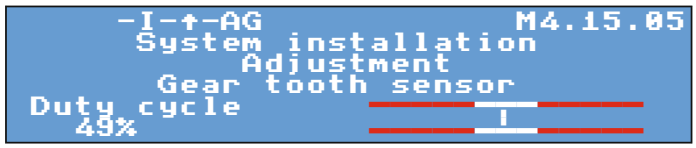
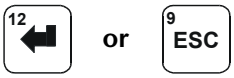


Fig. 4.4: Screen display for adjustment

Changing the distance between the sensor and gearwheel changes the position of the white bar in the screen display. This display is only updated while the machine is running. Optimal adjustment results will be obtained with a duty cycle of 50% or if the white bar is at least within the white area.



- Exit or cancel the view

KT-5 image mark sensor

Function:

The KT-5 sensor is an optical sensor that detects differences in contrast on printed material. It is suitable for detecting explicit image marks or (alternatively) suitable image edges with high contrast that occur once or more per image.

Since the KT-5 provides significantly less information than the rotary encoder by comparison, the print system must run at a constant speed to be able to display stable images. Fluctuations in the speed of the print system are reflected in an unstable image position. The image can be improved with a sensor combination (see *Sensor combination, page 4-9*).

Installation:

Please note!
To prevent the possibility of injuries, installation and mechanical adjustments to the sensor may only be performed while the printing press is stopped and has been secured against being turned back on.

To perform a calibration, the sensor is positioned over the material web in such a manner that the green speck of light generated by the KT-5 is as small and sharp as possible on the material and the image marks run under this speck of

light. The setscrew is used to adjust the sensitivity of the sensor so that the "Function" LED on the sensor briefly lights up or briefly goes off for each image mark.

Sensor combination

The InPrint system makes it possible to combine a gear tooth sensor and an image mark sensor. This can significantly improve the stability of the inspection position compared to using only one of the two sensors. The image mark sensor is used in this arrangement to detect the length of the image mark and the starting position of the image. The gear tooth sensor returns information about the speed of the print system and the position within an image.

This makes it possible to detect changes in speed more rapidly, the image remains significantly more stable, and programmed positions are retained after the unit is turned of and back on (with motorised positioning track only).

The sensor combination offers a convenient alternative for print systems in which a rotary encoder cannot be installed.

Compensation of acceleration

The InPrint system has a system to compensate for acceleration. If the image on the monitor appears to be unstable at a constant web speed, the threshold for compensation of acceleration should be increased incrementally.

4.15.10/4.15.15 Adjusting limit switches*

In the motorised version of the InPrint system, the adjustment of the limit switches must be checked and corrected if necessary after the positioning track has been installed. The limit switches are wear-free inductive sensors that signal the limit positions on each side of the positioning track.

Please note!
The InPrint system cannot be moved safely and reliably on the positioning track until the limit switches have been adjusted.

Function

The *Limit switch 1* and *Limit switch 2* menu items contain help for adjusting the limit switches.

Limit switch 1 is the sensor that is connected with the shorter cable line of the Y-shaped sensor cable.

To perform an adjustment, the InPrint system must be moved up to the end of the positioning track on the side of limit switch 1 until the sensor is over the limit switch actuator.

Menu

To select menu *4.15.10, Limit switch 1*:

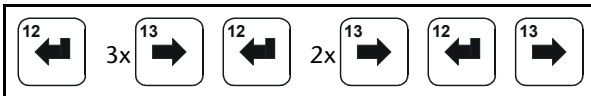


Fig. 4.5: Keystroke sequence to Menu 4.15.10, Limit switch 1

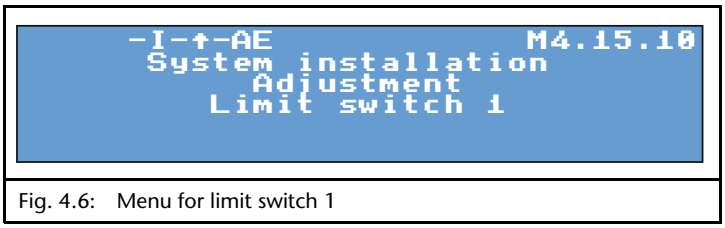


Fig. 4.6: Menu for limit switch 1

- Enable the menu for viewing

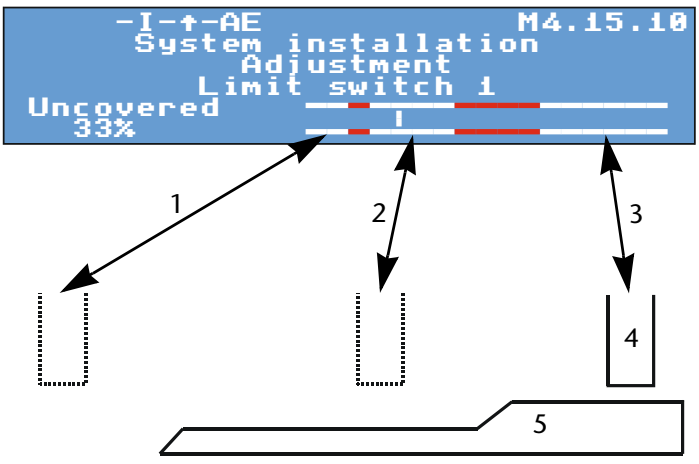
Adjustment

Changing the distance between the limit switch and the limit switch actuator changes the position of the white bar in the screen display (see *Fig. 4.7, page 4-11*).

An optimal adjustment can be achieved if the white bar is clearly within the corresponding white field at each of the three positions of the limit switch.

or

To adjust the three positions, move the InPrint system with the “11” or “13” key.



1 Position 1
2 Position 2
3 Position 3
4 Limit switch
5 Limit switch actuator

Fig. 4.7: Screen display for adjusting the limit switch

or

- Save the view or cancel

This process should be repeated with limit switch 2 (menu item *4.15.15*) on the other side of the positioning track.

Commissioning

Before commissioning

Please note:
The following mounting and electrical connection jobs must be checked before commissioning:

- The InPrint system and its accessories must be properly mounted.
- The InPrint system must be properly connected to the power supply source and to the system's EMERGENCY OFF.

When all mounting and connection jobs have been checked and are in proper condition, the InPrint system can be placed in operation.

Please note!
Do not touch anything on or in the vicinity of the moving parts while the InPrint system is in operation. There is a danger of being crushed.

Turning on the system

After the power supply has been turned on and the initialisation phase is complete, the InPrint system is ready for operation in about 1 minute. The H2 LED of the camera keyboard flashes during the initialisation phase and is continuously lit after start has been performed successfully.

1.25 Operation language

Function

The menu navigation of the InPrint system is language-oriented. You can select the desired language in the *Operation language* menu item.

Menu

To select menu *1.25, Operation language* :

Fig. 4.8: Keystroke sequence for Menu 1.25, Operation language

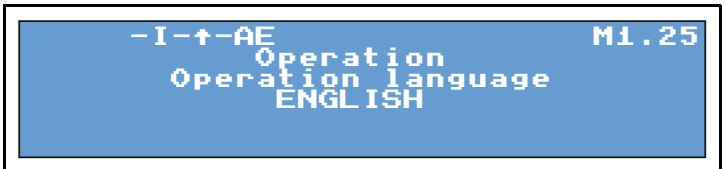
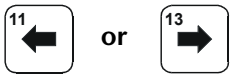


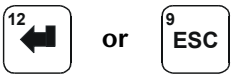
Fig. 4.9: Menu 1.25 Operation language

- Enable the menu for editing

Input



- Select the desired language in the menu



- Confirm entry or cancel the process

Decommissioning

1. Turn off the electrical power to the InPrint system.
2. Remove all cables from the InPrint system.
3. Disassemble the InPrint system.
4. Store the InPrint system according to the specified ambient conditions (see *Transport and storage, page 4-1*).

   OR

   Dispose of the InPrint system properly in accordance with national requirements.

5 SET-UP

SYSTEM SETTINGS

This section describes all settings to be made on the InPrint system after it has been installed on a printing press.

4.20 Synchronization

Function

You can select the synchronization sensor present in the InPrint system and set it up in the *Synchronization* menu item.

Note:
Incorrect settings for synchronization may cause the InPrint system to flash in the wrong position or not at all!

The status line shows the currently selected synchronization setting in Position 7.

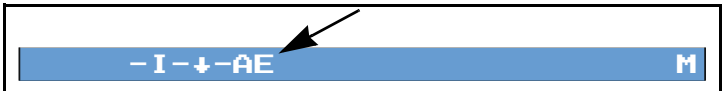


Fig. 5.1: Synchronization sensor in the status line

Menu

To select menu *4.20, Synchronization*:

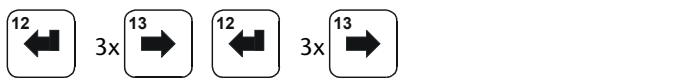


Fig. 5.2: Keystroke sequence for Menu 4.20, Synchronization

Fig. 5.3: Synchronization menu

- Enable the menu for editing

Entry

First select the active sensor in the *4.20.05* menu, then the set-up menu belonging to the active sensor.

or

- To select the desired menu:

4.20.05 Active sensor
Function: Select the active sensor
Setting: Gear tooth sensor, image mark sensor, rotary encoder, sensor combination

---

Note:
The only menu item of the following ones that needs to be edited is the one belonging to the active sensor.

4.20.10 Teeth/repeat (gear tooth sensor)
Function: Enter the number of teeth that pass the sensor during an image
Setting: 1 ... 32767

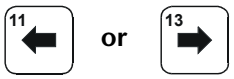
4.20.15 Marks/repeat (image mark sensor)
Function: Enter the number of image marks that pass the sensor within an image
Setting: 1 ... 64

4.20.20 Divider (rotary encoder)
Function: The length of an image in the InPrint system can be extended to several images of the web
Default setting: 1
Setting: 1 ... 64

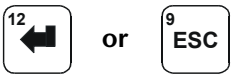
4.20.25 Marks/repeat (sensor comb.)
Function: Enter the number of image marks that pass the sensor within an image
Setting: 1 ... 64

4.20.30 Compensation of acceleration
See *Section 4, Compensation of acceleration*

- Enable the selected menu for editing



- Select the desired setting in the menu



- Confirm entry or cancel the process

4.15.25 Black and white level calibration

Function

For optimal image recording, you should calibrate the image sensor at least once after the InPrint system has been installed. An automatic image sensor calibration program is available for this purpose. You can start it in the *Black and white level calibration* menu.

Note:
We recommend performing an image sensor calibration on a regular basis, since the colour of the strobe lamp may change over the course of time or ambient conditions that affect images (temperature, ageing) may fluctuate.

Menu

To select the *4.15.25 Black and white level calibration* menu:

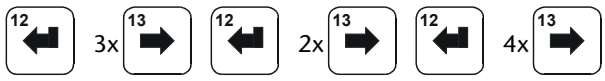


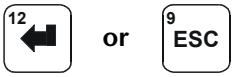
Fig. 5.4: Keystroke sequence to Menu 4.15.25, Black and white level calibration

Fig. 5.5: Menu 4.15.25, Black and white level calibration

- Enable the menu for editing

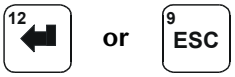
Entry

A template with a white surface corresponding in size to the shroud opening is required for calibration. The template must be placed under the field of view of the InPrint system while the print system is stopped. The template should be shielded from ambient light during the calibration.



- Start the calibration or cancel the process

Black and white values are optimally adjusted during the calibration. Once the process has started, it cannot be interrupted. The process is automatically terminated when the optimal result has been reached.



- Accept calibration values or discard calibration values

4.15.20 Gamma value

Function

The InPrint system offers an adjustment aid for optimal image reproduction that appears in the *Gamma value* menu item. It shows the reference colours that can be used to adjust the monitor.

Gamma value

The Gamma value is used to adjust the gradation curve (range of brightness). It depends on the non-linearity of the monitor and the length of the cable between the InPrint system and the monitor. The Gamma value should be selected after settings have been made on the monitor itself.

Menu

To select menu *4.15.20, Gamma value* :

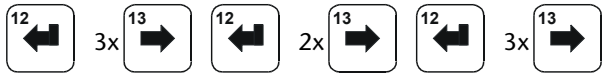


Fig. 5.6: Keystroke sequence to Menu 4.15.20 Gamma value

Fig. 5.7: Menu 4.15.20, Gamma value

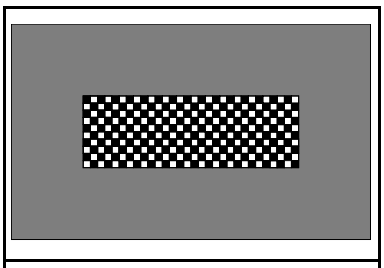


Fig. 5.8: Gamma value

- Enable the menu for editing

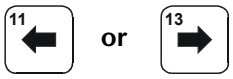
The rectangular field above the user menu shows a greyscale value corresponding to 50% of the white value on the border as well as a surface consisting of white and black pixels. The human eye interpolates a greyscale value from this surface corresponding to the brightness of the border if the gradation curve (range of brightness) is adjusted correctly.

Entry

Depending on the type of monitor, the following setting steps are recommended:

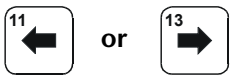
CRT monitors:

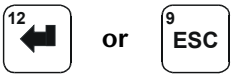
1. Set the contrast on the monitor to maximum
2. Set the brightness on the monitor to a small value
3. Adjust the Gamma value so that the brightness of the rectangular field is the same as that of the border



LCD/TFT monitors:

1. Adjust the contrast and brightness to 50%
2. Increase the contrast until white it fully illuminated but can still be distinguished from adjacent greyscale values
3. Adjust the Gamma value so that the brightness of the rectangular field is the same as that of the border
4. The brightness may need to be corrected





- Confirm entry or cancel the process

4.10 Arrow key functions

Function

The functions of the arrow keys (which are used to move the image) depend on the orientation in which the InPrint system is installed and/or the direction in which the web is running. If necessary, you can adjust the arrow keys to change the image position manually in the*Arrow key functions* menu item.

Menu

To select menu *4.10, Arrow key functions* :

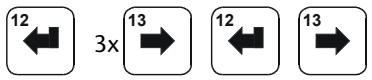


Fig. 5.9: Keystroke sequence for Menu 4.10, Arrow key functions

Fig. 5.10: Menu 4.10 Arrow key functions

- Enable the menu for editing

Entry

or

- To select the desired menu:

4.10.05 Left/right

Function: The arrow keys are swapped according to the movement of the InPrint system on the positioning track

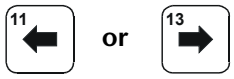
Setting: Not swapped/swapped

4.10.10 Up/down

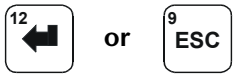
Function: The arrow keys are swapped according to the movement of the InPrint system within an image in the direction of web motion

Setting: Not swapped/swapped

- Enable the menu for editing



- Select the desired setting in the menu



- Confirm entry or cancel the process

4.05 Shift keys assignment

Function

A second assignment for keys 1 through 6, key 8 and keys 10 through 14 can be made in the *Shift keys assignment*. You can use the Shift key to set up direct access to menu items that are used frequently.

Menu

To select menu *4.05 Shift keys assignment* :

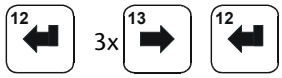
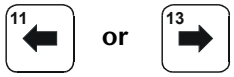


Fig. 5.11: Keystroke sequence to 4.05, Shift keys assignment

Fig. 5.12: Menu 4.05, Shift keys assignment

- Enable the menu for editing

Entry



- To select the desired menu:

4.05.05 Shift-1	**4.05.35 Shift-8**
4.05.10 Shift-2	**4.05.40 Shift-10**[1]
4.05.15 Shift-3	**4.05.45 Shift-11**[1]
4.05.20 Shift-4	**4.05.50 Shift-12**[1]
4.05.25 Shift-5	**4.05.55 Shift-13**[1]
4.05.30 Shift-6	**4.05.60 Shift-14**[1]

[1] starting with software version 1.008

- Enable the selected menu for editing

or

- Find the menu item you want to link with the selected key
- To do this, used the menu code in the status line as a guide

Note:
Only menu items that are appropriately marked in the menu tree (see *Section 12, Appendix - Menu tree*) can be assigned to a Shift key.

or

- Confirm entry or cancel the process

4.25 Change password

Function

Menu items that are marked with a "#" in the menu tree (see *Section 12, Appendix - Menu tree*) can be locked in the *Change password*menu item.

Please note!
Do not lose the password, since the only way to reach the locked menu items is by entering the password.

Menu

To select menu *4.25, Change password*:

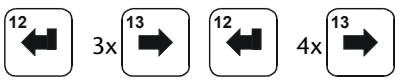


Fig. 5.13: Keystroke sequence to Menu 4.25, Change password

Fig. 5.14: Menu 4.25 Change password

- Enable the menu for editing

Entry

Enter the password with the keys 1 through 6. The password may contain from 1 to 6 characters.

If a password is already set, it must be confirmed first.

If the password field remains empty, the menu items that were locked by password are unlocked.

or

- Confirm entry or cancel the process

SETTING UP IMAGE PARAMETERS

This section describes all settings related to displaying the image on the monitor of the InPrint system.

2.05 Split screen mode

Function

This split screen function makes it possible to overlay the current image of the material web on a reference image that has been previously saved (see *Section 6, 1.05 Reference image*). Three sets of settings, A, B and C can be configured or turned on and off in the *Split screen mode* menu item.

Note:
Every split screen mode configured as “active” can be selected with the key 5 in the basic state of the InPrint system.

Menu

To select menu *2.05, Split screen mode* :

Fig. 5.15: Keystroke sequence to menu 2.05, Split screen mode

Fig. 5.16: Menu 2.05 Split screen mode

- Enable the selected menu for editing

Entry

or

- To select the menu for split screen mode A, B or C:

  2.05.05 Mode A
  2.05.10 Mode B
  2.05.15 Mode C

- Enable the selected menu for editing

Each menu item for mode A, B or C offers the following setting options:

or

- To select the desired setting menu:

2.05.xx.05 Activation
Function: Turn a set of settings on or off
Setting: Inactive/Active

2.05.xx.10 Horizontal elements
Function: Number of horizontal subdivisions
Setting: 1, 2, 4, 8

2.05.xx.15 Vertical elements
Function: Number of vertical subdivisions
Setting: 1, 2, 4, 8

2.05.xx.20 Swap of Live/reference image
Function: Reverse the order of the two images
Setting: Not swapped/swapped

Fig. 5.17 shows an example of a split screen mode with the following settings:

Horizontal elements: 2
Vertical elements: 4
Swap of live/reference image: Not swapped

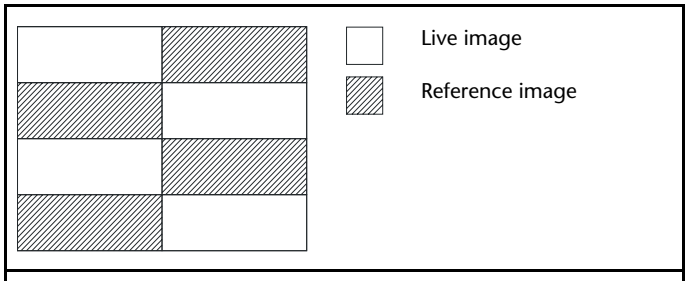


Fig. 5.17:Example of a split screen mode

Note:
The following settings:
"*Horizontal elements*" = 1,
"*Vertical elements*" = 1 and
"*Swap of live/reference image*" = Swapped
can be used to observe the entire reference image.

- Enable the selected menu for editing

or

- Select the desired setting in the menu

or

- Confirm entry or cancel the process

2.10 Exposure mode

Function

Three sets of settings, A, B and C can be configured or turned on and off in the *Exposure mode* menu item.

Note:
Each exposure mode configured as “active” can be selected in the *Section 6, 1.10 Exposure mode* menu.

Menu

To select Menu *2.10, Exposure mode*:

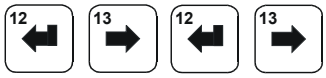


Fig. 5.18: Keystroke sequence for Menu 2.10, Exposure mode

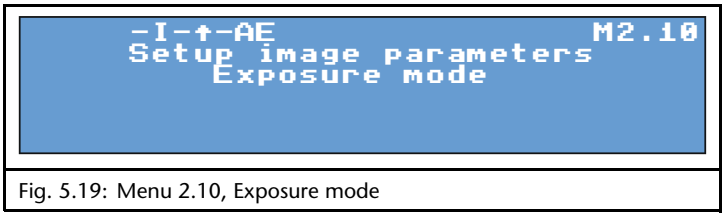


Fig. 5.19: Menu 2.10, Exposure mode

- Enable the selected menu for editing

Entry

or

- To select the menu for Exposure mode A, B or C
  2.10.05 Mode A
  2.10.10 Mode B
  2.10.15 Mode C

- Enable the selected menu for editing

Each menu item for mode A, B or C offers the following setting options:

- To select the desired setting menu:

2.10.xx.05 Activation
Function: Turn a set of settings on or off
Setting: Inactive/Active

2.10.xx.10 Gain
Function: Select digital brightness gain
Setting: 1, 2, 3, 4

2.10.xx.15 Strobe No. 1
2.10.xx.20 Strobe No. 2
2.10.xx.25 Strobe No. 3
Function: Turn which strobe lamps are present on and off
Setting: Off/On

- Enable the selected menu for editing

- Select the desired setting in the menu

- Confirm entry or cancel the process

2.15 Idle flash frequency

Function

InPrint system detects a stoppage of the printing press after a maximum of 60seconds. If function *2.15, Idle flash* is activated, the system starts to flash at a pre-defined frequency when the web is stopped. This frequency can be adjusted in the *Idle flash frequency*.

Menu

To select menu *2.15 Idle flash frequency* :

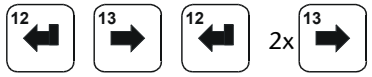


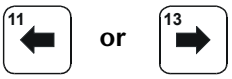
Fig. 5.20: Keystroke sequence for Menu 2.15, Idle flash frequency

Fig. 5.21: Menu 2.15, Idle flash frequency

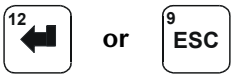
- Enable the selected menu for editing

Entry

The idle flash frequency can be set to a value of 1 Hz, 2 Hz, 4 Hz or 8 Hz.



- Select the desired setting in the menu



- Confirm entry or cancel the process

Note:
As soon as the printing press is started and sensor signals are being received, idle strobing ceases automatically.

SETTING UP SCROLL PARAMETERS

This section describes all functions that are available to control scrolling in the InPrint system.

3.05 Scroll increment

Function

You can use this menu item to define the scroll increment for manual position change.

Menu

To select menu *3.05, Scroll increment*:

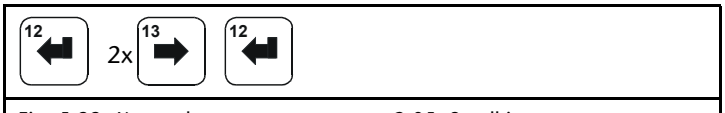


Fig. 5.22: Keystroke sequence to menu 3.05, Scroll increment

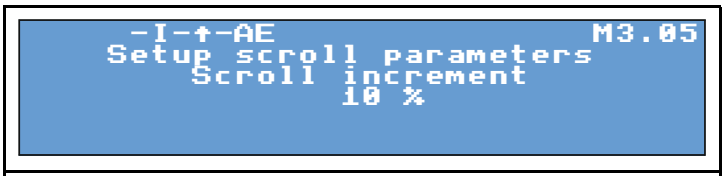
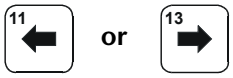


Fig. 5.23: Menu 3.05, Scroll increment

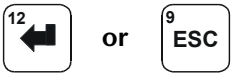
- Enable the selected menu for editing

Entry

The increment is set as a percentage of the image, within a range from 1% to 50%.



- Select the desired setting in the menu



- Confirm entry or cancel the process

Track referencing*

If the user selects an automatic process (Autoscan mode or Programmable track mode), a track referencing is performed at the time of the first selection after restarting the InPrint system. Only the beginning of the positioning track is detected. This can be used to determine all programed positions.

3.10 Autoscan mode A*
3.15 Autoscan mode B*

Function

You can use the *Autoscan mode* to configure a range that will continuously be traversed by the InPrint system. The field of view of the current position is displayed on the monitor. Two different sets of settings, Autoscan mode A and Autoscan mode B are available.

Note:
If the Autoscan mode is set to active, it can be selected in the basic state of the InPrint system with the key 8.

Fig. 5.24 shows the four possible scan modes that can be set up in the menu item in question. **Only Autoscan mode "Repeat scan" can be selected in the non-motorised version of the InPrint system.**

1: Repeat scan

- Scanning is performed only in the direction of web motion
- The only factor affecting it is the setting "Scroll increment"

2: Web scan

- Scanning is performed across the web
- The only factor affecting it is the setting "Camera speed"

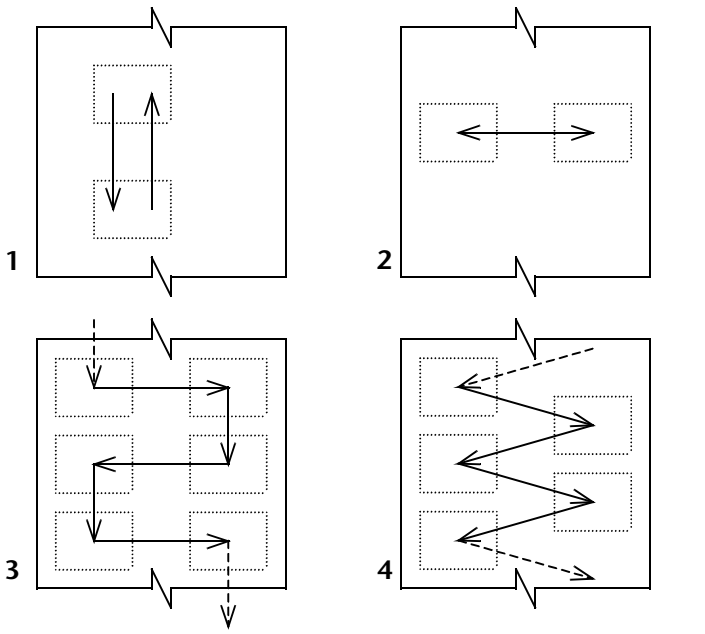


Fig. 5.24: Scan modes

3: Meander*:

- The image is scanned line by line
- The camera moves at the set “Camera speed”
- The “Scroll increment” setting applies when a limit position is reached

4: Triangular*:

- Diagonal path along the web, derived from simultaneous horizontal and vertical motion
- The settings for “Camera speed” and “Scroll increment” affect the image position

Autoscan mode A* menu

To select menu *3.10 Autoscan mode A*:

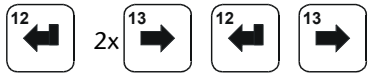


Fig. 5.25: Keystroke sequence to menu 3.10, Autoscan mode A

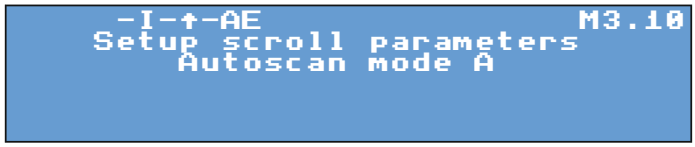


Fig. 5.26: Menu 3.10, Autoscan mode A

- Enable the menu for editing

Autoscan mode B* menu

To select menu *3.15 Autoscan mode B*:

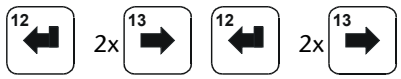


Fig. 5.27: Keystroke sequence to menu 3.15, Autoscan mode B

Fig. 5.28: Menu 3.15, Autoscan mode B

- Enable the menu for editing

Entry

The menu item for Autoscan mode A or Autoscan mode B offers the following setting options:

or

- To select the desired setting menu:

  3.xx.05 Activation
  Function: Turn Autoscan mode on or off
  Setting Inactive/Active

  3.xx.10 Scan mode*
  Function: The automatic scan pattern is set

Setting: Repeat scan
Web scan*
Meander*
Triangular*

3.xx.15 Scroll increment

Function: Set the scroll increment

Setting: Motion can be adjusted in a range from -50% to 50%. The number corresponds to the percentage of the size of an image in the direction of web motion.

3.xx.20 Camera speed*

Function: Adjust the speed at which the InPrint system moves on the positioning track

Setting: Motion can be adjusted in a range from 5% to 100% of the maximum motor speed.

3.xx.25 Limit position 1*
3.xx.30 Limit position 2*

Function: Two limit positions must be defined for the motion range on the positioning track. Motion is restricted to between these two points.

Setting: Move the InPrint system with the right/left keys of a remote control unit to the desired limit position, 1 or 2

- Enable the selected menu for editing

or

- Select the desired setting in the menu

or

- Confirm entry or cancel the process

Some information on the Programmable track mode**

The InPrint system Programmable track mode makes it possible to program up to 32 positions. These positions are approached sequentially by the InPrint system. The field of view of the current position is displayed on the monitor. Individual program positions can be skipped by deactivating them. Once the last activated position is reached, the system starts again at the first.

We recommend first creating a program sequence with the *Programmable track mode teach in*. If necessary, the properties of these program positions can then be adjusted in the *Programmable track mode A* or *Programmable track mode B* menu item.

3.20 Programmable track mode teach in**

Function

This menu item offers a fast way to create a program for programmable track mode.

Before the menu item is selected, the InPrint system must be moved to the position to be saved and all image settings must be set to the necessary values.

Note:
This function is set when the unit leaves the factory to extended key function Shift and key 8 (see *Page3-2*). The setting can also be changed with *4.05 Shift keys assignment*.

Note:
In order to set a **new program sequence** all program positions must previously be deactivated (see *Section 5, 3.xx.05 Deactivate all positions*).

If you need to add **additional positions** to a program sequence, deactivation must not be used.

Menu

To select menu *3.20 Programmable track mode teach in* :

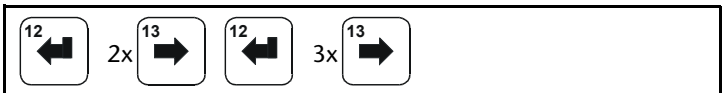


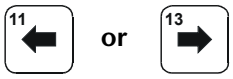
Fig. 5.29: Keystroke sequence to menu 3.20, Programmable track mode teach in

Fig. 5.30: Menu 3.20, Programmable track mode teach in

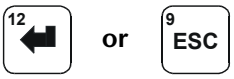
- Enable the selected menu for editing

Entry

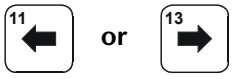
All settings of the observation area are saved.



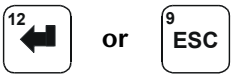
- Select mode and position number (from A-01 to B-32)



- Confirm entry or cancel the process



- Specify the number of images to be recorded at the current position before switching to the next position



- Confirm entry or cancel the process

If both entries are confirmed, the selected position (in whichever mode is selected) is programed and activated.

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3.25 Programmable track mode A*
3.30 Programmable track mode B*

Function

Properties can be changed in the *Programmable track mode* for any of the 32 possible selections. Two different sets of settings, Programmable track mode A and Programmable track mode B are available.

In addition to the image position, settings such as image rotation, mirroring, digital zoom and Exposure mode can be saved for each program point.

Note:
If Programmable track mode is set to active, it can be selected in the basic state of the InPrint system with the key 8.

Programmable track mode A* menu

To select menu *3.25 Programmable track mode A*:

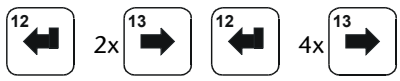

Fig. 5.31: Keystroke sequence to menu 3.25, Programmable track mode A

Fig. 5.32: Menu 3.21, Programmable track mode A

- Enable the menu for editing

Programmable track mode B* menu

To select menu *3.30 Programmable track mode B*:

Fig. 5.33: Keystroke sequence to menu 3.30, Programmable track mode B

Fig. 5.34: Menu 3.30, Programmable track mode B

- Enable the menu for editing

Entry

The menu item for Programmable track mode A or Programmable track mode B offers the following setting options:

or

- To select the desired setting menu:

3.xx.05 Deactivate all positions

Function: All 32 positions of the selected Programmable track mode are deactivated This is useful when you are creating a new program sequence

3.xx.10 Activation

Function: Turn Programmable track mode on or off

Setting: Inactive/Active

3.xx.20 Position 1 ... 3.xx.20 Position 32 ...

Function: Programming of the 32 program positions

Setting: The following settings can be made for each program position (yy)

3.xx.yy.05 Activation

Function: Turn a program position on or off All activated positions are approached in the program sequence one after the other

Setting: Inactive/Active

3.xx.yy.10 Accept active settings

Function: The following current settings are accepted for the selected program position:

XY position, digital zoom, selected exposure mode, rotation setting,

mirroring and the selected split screen mode

The selected program position is activated at the same time.

Setting: The XY position can be corrected with the arrow keys.

3.xx.yy.15 Position (X,Y)

Function: The current XY-position is accepted for the selected program position

The other settings (digital zoom, selected Exposure mode, rotation setting, mirroring and selected split screen mode) remain unchanged.

The selected program position is not activated automatically.

Setting: The XY position can be corrected with the arrow keys.

3.xx.yy.20 Digital zoom factor

Function: Select digital zoom

Setting: 1.0; 1.3; 2.0; 2.6

3.xx.yy.25 Number of images

Function: Specify the number of images to be recorded at the current position before switching to the next position

Setting: 1 ... 99

3.xx.yy.30 Exposure mode

Function: Select an activated Exposure mode

Setting: A, B or C

3.xx.yy.35 Image rotation

Function: Select image rotation at the current position

Setting: 0°, 90°, 180°, 270°

3.xx.yy.40 Mirroring

Function: Turn mirroring of the current position on or off

Setting: On/Off

3.xx.yy.45 Split screen mode

Function: Select Split screen mode for reference image display

Setting: -, A, B or C

Note:
Only one reference image is available.

- Enable the selected menu for editing

or

- Select the desired setting in the menu

or

- Confirm entry or cancel the process

4.15.30 Lens

Function

The adjusting speed of zoom and focus can be changed in this menu item.

Menu

To select menu *4.15.30, Lens*:

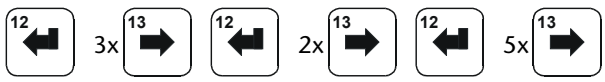

Fig. 5.35: Keystroke sequence to Menu 4.15.30, Lens

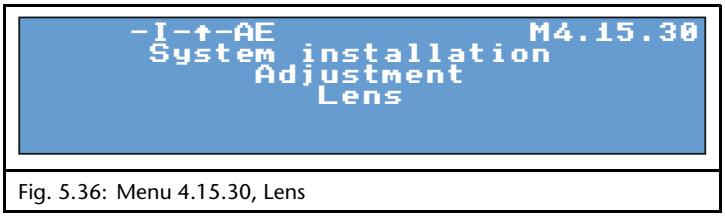

Fig. 5.36: Menu 4.15.30, Lens

- Enable the selected menu for editing

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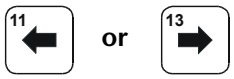
Entry

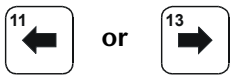


- To select the desired menu:

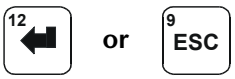
  4.15.30.05 Zoom PWM
  Function: Zoom adjustment speed
  Setting 10% ... 100%

  4.15.30.10 Focus PWM
  Function: Focusing adjustment speed
  Setting 10% ... 100%

- Enable the selected menu for editing



- Select the desired setting in the menu



- Confirm entry or cancel the process

5.20 Master reset

Function

You can reset **all** InPrint system settings to their default values in this menu item.

Please note!
The *Master reset* function should **not** be used in normal operation!
After this function is used, the InPrint system must be completely readjusted.
You should therefore only use this function if requested to do so by our Service department.

Please note!
The only way to exit this menu item is by turning off the InPrint system.

A password must be set in the InPrint system before this function can be used.

Menu

To select Menu *5.20, Master reset*:

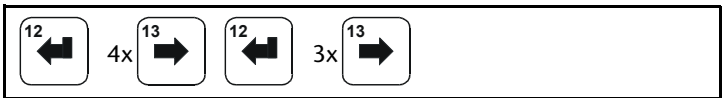


Fig. 5.37: Keystroke sequence to menu 5.20, Master reset

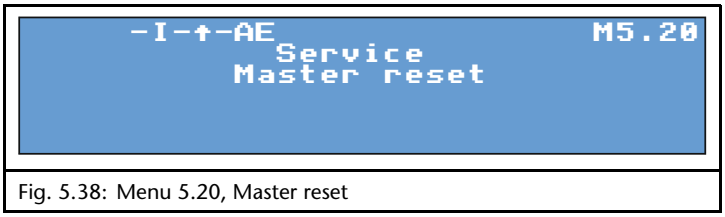


Fig. 5.38: Menu 5.20, Master reset

- Enable the selected menu

  If no password has been set in the InPrint system the *Master reset* function can no longer be processed from here.

- Enter the password and confirm

- **Press ENTER to set defaults** confirm

- **Press ENTER to confirm** confirm again
- Default values are set (lasts about 30 sec.)
- InPrint system restart

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6 OPERATION

MAIN FUNCTIONS

This section describes all functions that can be controlled directly with the keyboard.

Selecting an operating mode

8 M

By pressing key 8, any activated operating mode can be selected, or the system can be set to Manual. The selected setting appears for a few seconds in the status line to help orient the user.

Fig. 6.1: Status line - selecting an operating mode

Possible operating modes:

- M Manual
- A Autoscan mode A*
- AB Autoscan mode B*
- P Programmable track mode A**
- PB Programmable track mode B**

During program operation (P, PB), all programmable settings are blocked. The lens can be adjusted, however (zoom, iris, focus).

Note:
For reasons of safety, the operating mode on motorised InPrint systems can only be selected with an external keyboard and not with the key 8 on the camera keyboard.

Image position*

The observation window can be moved with the arrow keys in “Manual” operating mode.

The keys 11 and 13 have no function in the non-motorised InPrint version. For safety reasons, these keys are only active on the external keyboards in motorised InPrint systems.

Note:
The direction of motion of the image on the monitor can be adjusted under *4.10 Arrow key functions* if necessary.

Brightness

You can use the key 1 to select the brightness adjustment functions. The ◧ icon is displayed in the status line. You can use the arrow keys to change the settings.

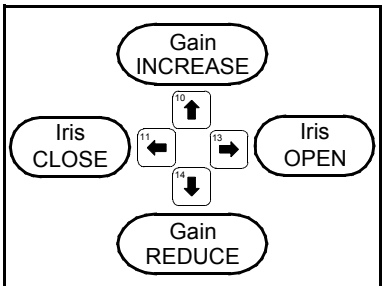

Fig. 6.2: Key assignment, brightness

Table 6.1: Brightness

Key	Function	Effect
13	Open the lens iris	Image becomes brighter
11	Close the lens iris	Image becomes darker
10	Increase digital gain	Image becomes brighter
14	Reduce digital gain	Image becomes darker

An increase in brightness caused by changing the digital gain may result in a noisier image, and should therefore be kept to a small amount. On the other hand, increasing the brightness with the iris reduces optical depth of focus. An optimal adjustment may thus be achieved through a combination of these two setting options.

or

You can exit this setting function by pressing the key 1 again or with the escape key, the key 9.

Field of view/magnification

You can use the key 2 to change the current size of the field of view. The ⊠ icon is displayed in the status line. The settings can be changed with the arrow keys.

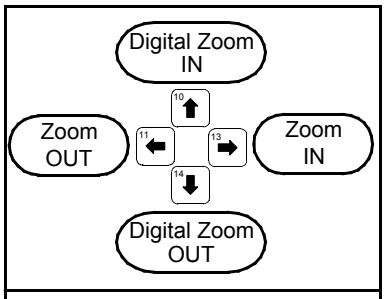

Fig. 6.3: Key assignment, Field of view/magnification

Table 6.2: Field of view/magnification

Key	Function	Effect
13	Optical zoom-IN	Smaller field of view, larger magnification
11	Optical zoom-OUT	Larger field of view, smaller magnification
10	Digital zoom-IN	Smaller field of view, larger magnification
14	Digital zoom-OUT	Larger field of view, smaller magnification

You can use optical zoom to increase the magnification of the image by a factor of up to 9. Digital zoom is used to further increase the magnification. It can increase magnifcation in 3 steps by an additional factor of 2.67.

While a change to the optical setting does not take effect until the following image, a change in the digital zoom takes effect immediately, and can even be used in Freeze state.

or

You can exit this setting function by pressing the key 2 again or with the escape key, the key 9.

Focus/Edge enhancement

You can use the key 3 to select the focus/edge enhancement. The status line shows the icon F. The settings can be changed with the arrow keys.

or

You can exit this setting function by pressing the key 3 again or with the escape key, the key 9.

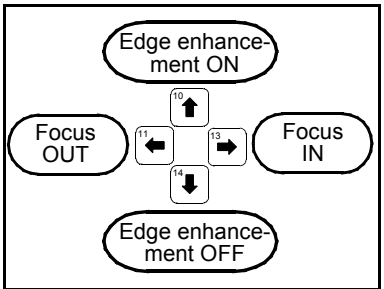

Fig. 6.4: Key assignment, focus/ edge enhancement

Table 6.3: Sharpness

Key	Function
	Changes the focal point
	Changes the focal point
	Edge enhancement on
	Edge enhancement off

Freeze

You can use the Freeze function to freeze the last image. Pressing the key 4 stops the image acquisition and causes a **F** to be displayed in the first position of the status line.

Fig. 6.5:key 4 - Freeze in the status line

Pressing the key 4 again ends the Freeze state. The status line then shows a "–".

Note:
Some functions, for example image rotation, brightness, zoom, focus or moving the image are not visible until after you leave the Freeze state.

Split screen mode

Pressing the key 5 allows you to select or turn off any activated split screen mode (see *2.05 Split screen mode, page 5-10*).

The currently selected mode is displayed in the third position of the status line (**–**, **A**, **B**, **C**).

Fig. 6.6: Status line - key 5 - Split screen mode

Image rotation

The current field of view can be rotated by pressing key 6 is 90° steps. The status line represents the selected direction of motion in the form of an arrow.

Fig. 6.7: key 6 - image rotation in the status line

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ADDITIONAL FUNCTIONS

All additional functions in the menu structure that are required to operate the InPrint system during ongoing operation are described in this section.

1.05 Reference image

Function

You can use this menu item to save the last image to be read by the image sensor as a reference image. This reference image is used by the split screen function as a comparison image for quality control. The reference image is no longer available once the power has been turned off.

Note:
Using the Freeze function is good way to help find a suitable reference image.

Menu

To select Menu *1.05, Reference image*:

2x [12]

Fig. 6.8: Keystroke sequence for Menu 1.05, Reference image

Fig. 6.9: Menu 1.05, Reference image

[12]

- Enable the selected menu

Input

[12] or [9 ESC]

- Save reference image or cancel the process

[7 Shift] then [9 ESC]

- Exit menu

1.10 Exposure mode

Function

Any activated exposure mode (see *2.10 Exposure mode, page 5-12*) can be selected under this menu item, in addition to the standard mode "-" (Strobe No. 1 On plus Strobe No. 2 and Strobe No. 3 Off).

The status line shows the current setting of the Exposure mode in Position 6.

Fig. 6.10: Status line - exposure mode

Menu

To select Menu *1.10, Exposure mode*:

2x

Fig. 6.11: Keystroke sequence for Menu 1.10, Exposure mode

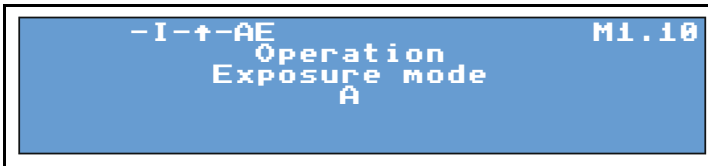


Fig. 6.12: Menu 1.10, Exposure mode

- Enable the selected menu

Input

or

- Select the desired exposure mode
  - – from
  - **A** Mode A
  - **B** Mode B
  - **C** Mode C

or

- Confirm entry or cancel the process

1.15 Idle flash

An idle flash is generated if no sensor signals have been received for max. 60 seconds, in other words if the print system has stopped.

Idle flashing can be turned on and off with this menu item.

The status line shows the current setting in Position 2.

Fig. 6.13: Status line - idle flash

Menu

To select Menu *1.15, Idle flash*:

Fig. 6.14: Keystroke sequence for Menu 1.15, Idle flash

Fig. 6.15: Menu 1.15, Idle flash

- Enable the selected menu

Input

or

- Select the desired setting in the menu
  - – Idle flash Off
  - **I** Idle flash On

or

- Confirm entry or cancel the process

1.20 Mirroring

Function

Mirrored printing can be displayed normally with this function (for example to display fonts correctly).

Mirroring can be turned on and off with this menu item.

The status line shows the current setting in Position 5.

Fig. 6.16: Status line - mirroring

Menu

To select Menu *1.20, Mirroring*:

Fig. 6.17: Keystroke sequence for Menu 1.20, Mirroring

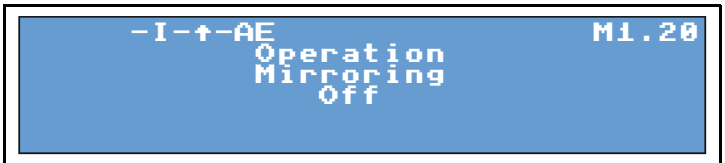


Fig. 6.18: Menu 1.20, Mirroring

12 ● Enable the selected menu

Input

11 or 13 ● Select the desired setting in the menu
- – off
- M Mirrored

12 or 9 ESC ● Confirm entry or cancel the process

7 MAINTENANCE

The InPrint system is designed for a long service life without maintenance.

Cleaning

If the InPrint system is used in an extremely dusty environment or in environments with paint fumes, the lenses, shroud and the acrylic glass pane on the strobe head must be cleaned with a soft moist cloth when they become dirty.

Note:
No aggressive cleaning agents or solvents can be used. These agents have a corrosive effect on the lens coating and acrylic glass pane, which results in colour distortion and fuzzy images.

If there is a lot of dust in the air, you should also clean the positioning track and the drive belt occasionally with a brush or with compressed air.

Please note!
The InPrint system must be turned off to clean the positioning track and drive belt.
Otherwise there is a danger of the user being injured and of damaging the drive belt.

strobe lamp

The strobe head contains a high-quality xenon strobe lamp low in UV light. It is a part naturally subject to wear.

After being used for an extended period of time, the strobe lamp may

- fail
- there may be a gradual reduction in light output
- there may be significant fluctuations in light.

This reduced light output may no longer be sufficient to completely illuminate the field of view.

In both cases, the strobe lamp must be replaced.

Note:
Only strobe lamps from Fife-Tidland GmbH must be used. Other strobe lamps may result in an overload on the electronics, colour distortions or formation of ozone.

It is also possible to replace the entire strobe head. This can be done very quickly and without tools.

Changing the strobe head

- Turn off the InPrint system.

Please note!
Electrical connections on the InPrint system should always be made or disconnected while there is no electrical power in the system. There is a danger of electrical shock and damage to the InPrint system.

- To make it easier to set up the system again after replacing the strobe lamp, the position of the old strobe lamp should be written down.
- After the cable has been unscrewed and removed, the strobe lamp can be removed carefully by loosening the star nuts.

- The new strobe head should then be fastened in its original position on the InPrint system with the two star grip nuts and the cable should be connected again.
- Then the InPrint system can be turned on again.

Changing the strobe lamp

The strobe head must be removed to change the strobe lamp.

- Turn off the InPrint system.

Please note!
Electrical connections on the InPrint system should always be made or disconnected while there is no electrical power in the system. There is a danger of electrical shock and damage to the InPrint system.

- To make it easier to set up the system again after replacing the strobe lamp, the position of the old strobe lamp should be written down.
- After the cable has been unscrewed and removed, the strobe lamp can be removed carefully by loosening the star nuts.

Please note!
The power supply cable on the strobe head must be removed at least 30 seconds before opening. It must not be plugged in again until after work on the strobe head is complete. There is a risk of electrical shock.

Note:
You must not touch the strobe lamp with your bare hands while you are working with it. Instead, use a clean cloth that has no grease on it. Any dirty areas will vaporise and affect the reflector and electronics.

- Remove the acrylic glass pane
- Snap both ends of the strobe lamp upwards out of the support with a slight tug one after the other and then set the lamp to the side.
- Remove the strobe lamp carefully from underneath the wire

- Follow the opposite order to the instructions above to set the strobe lamp in place again

Please note!
Make certain the polarity of the new strobe lamp is correct as follows: The red dot must be inserted on the side that is identified as the “Anode”.

- Screw the acrylic glass pane back on together with the rectangular washers
  The rough side of the acrylic glass plane must be facing out.
- Then mount the strobe head in the original position on the InPrint system with the two star grip nuts and connect with the cable
- Then the InPrint system can be turned on again.

Replacing the camera head

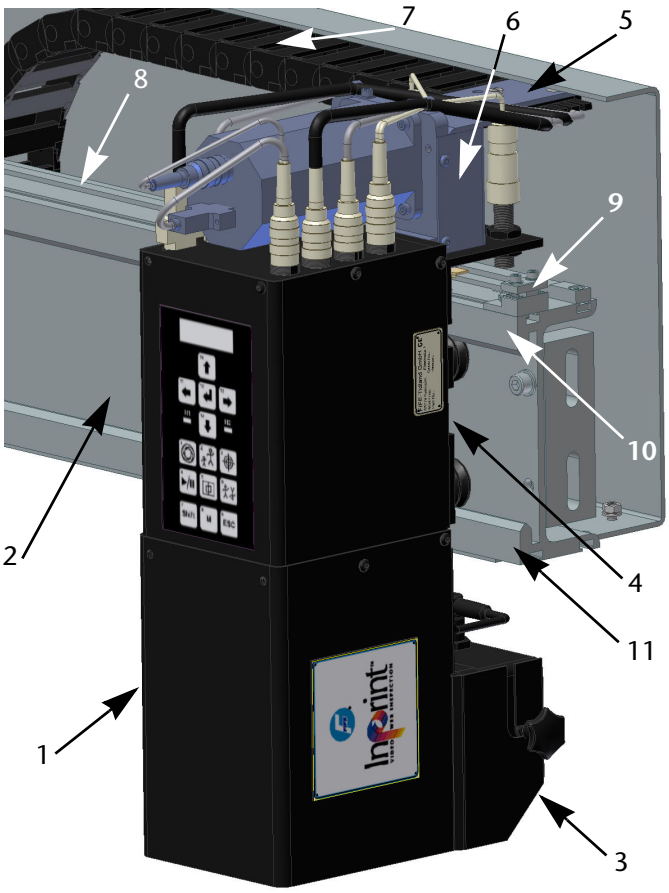
Please note!
All mounting and dismounting tasks on the InPrint system must be performed when there is no electrical power in the system.

Mounting and dismounting tasks must only be performed when the printing machine has been stopped and has been secured from being turned on again.

Preparation for dismounting

with a motorised InPrint system:

1. Loosen plugs X2, X3, X5, X6 and the earth lead from the camera head
2. Loosen the cable clamp (12 - *Fig. 7.2, page 7-6*)
3. Remove the drive housing (6) (2 parts)
4. Remove the mounting bracket (5) on the camera head (2 screws)



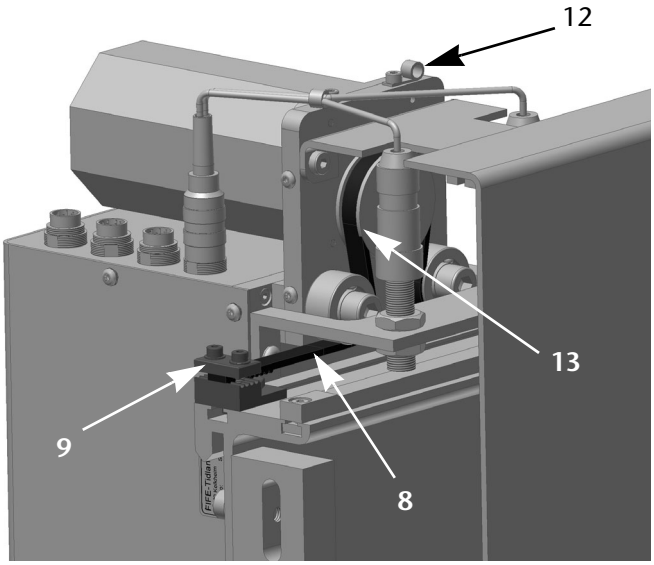
1 Camera head
2 Positioning track
3 Strobe head
4 Positioning track fastening
5 Mounting bracket
6 Drive housing
7 Cable chain
8 Drive belt
9 Clamping block
10 Upper guide rail
11 Lower guide rail

Fig. 7.1: Overview

5. Loosen the drive belt (8) on the clamping block (9)
6. Remove the drive belt from the drive unit (13) of the camera head

With a non-motorised InPrint system:

1. Loosen the locking screw
2. Loosen plugs X2, X3, X5, X6 and the earth lead from the camera head
3. Loosen the cable clamp
4. For a non-motorised InPrint-System with cable chain, the mounting bracket for the chain must be unscrewed on the camera

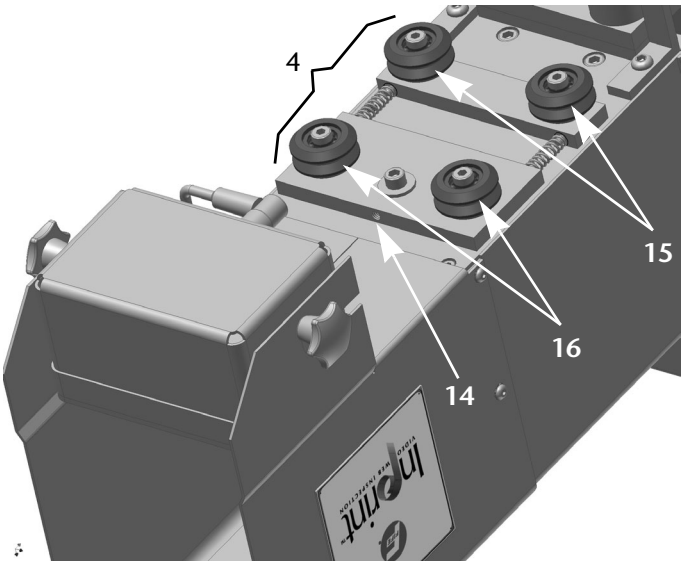


8 Drive belt
9 Clamping block
12 Cable clamp
13 Drive unit

Fig. 7.2: Drive belt and clamping block

Removing the camera head

1. Loosen the M6 set screw (14) on the positioning track fastening (4) on the rear side of the camera head



4 Positioning track fastening
14 Set screw
15 Upper rollers
16 Lower rollers

Fig. 7.3: Camera fastening

2. Pull the camera head down (in the direction of the shroud opening) and unhook the upper rollers (15) from the upper guide rail (10)
3. Lift the camera head from the lower guide rail (11), raising it up and out of the way

Installing the camera head

If a camera head needs to be mounted on an existing positioning track, follow the steps below:

1. Insert the camera head with the lower rollers (16) into the lower guide rail (11)
2. Pull the camera head down (in the direction of the shroud opening) and hook the upper rollers (15) onto the upper guide rail (10)
3. Carefully tighten the set screw (14) just enough so that you can feel counter pressure
4. Turn the set screw back about a quarter turn (the camera head must be fastened tightly enough so that it can be twisted minimally out of its position perpendicular to the positioning track)

Continuing with a motorised InPrint system:

5. Thread the drive belt (8) into the drive unit (13) of the camera head
6. Tighten the drive belt manually in the clamping block (9) until it is tight enough that the camera head cannot move around on the drive belt
7. Screw the mounting bracket (5) onto the camera head (2 screws)
8. Fasten the drive housing (6) in place (2 parts)
9. Insert the cable clamp (12) and fasten it
10. Fasten plugs X2, X3, X5, X6 and the earth lead onto the camera head

Note:
The limit switches on the positioning track must be readjusted (*4.15.10/4.15.15 Adjusting limit switches*, page 4-9*).

Continuing with a non-motorised InPrint system:

5. For a non-motorised InPrint-System with cable chain, the mounting bracket for the chain must be screwed onto the camera
6. Insert the cable clamp and fasten it
7. Fasten plugs X2, X3, X5, X6 and the earth lead onto the camera head
8. Move the camera head to the desired position and tighten with the locking screw

8 TROUBLESHOOTING

Image reproduction

Table 8.1: Image reproduction

Error symptoms	Possible causes of errors	Solution
Monitor stays black, neither LED H1 nor H2 are flashing or lit	The InPrint system is not connected to +24V	Check the cable
	No power supply	Check the voltage at the point where the power feeds in
LED H1 is lit continuously, monitor indicates lack of synchronization	Monitor cable (VGA) faulty	Check plug connection and cable. Replace if necessary.
Monitor stays black, LED H1 flashes slowly	Short-circuit in the VGA cable	
Monitor stays black, LED H1 flashes quickly	Internal error has occurred	Contact the Service Department
Monitor image is dark, system not flashing	The strobe lamp may not be turned on in the current exposure mode	Check: • See *5.10.10 Strobe counter* The counter counts every flash that is actually generated by the control system • Check Exposure mode and the settings for Exposure mode: see status line Position 6
	The strobe head control cable may not be correctly connected	Check the cable
Monitor image is dark, System flashes (strobe)	Iris closed?	Open the iris Select the key 1 and then hold the key 13 down for a long time
The image that is displayed is badly distorted	The digital gain may be set too high	If possible, reduce the digital gain and open the lens iris

Table 8.1: Image reproduction

Error symptoms	Possible causes of errors	Solution
Image stopped / no images being taken	The printing press is stopped (no synchronization signals) and idle flash is off	Press the key 7 to show the status line (**I** in Position 2 of the status line shows the idle flash setting)
		The idle flash is not detected until after about 60 seconds
	Programmable track mode selected and print system stopped	Idle flashing is not permitted in Programmable track mode. Switch to Manual mode
The monitor image is static, system not flashing	Freeze activated?	Press the key 7 to show the status line (**F** in status line Position 1) Pressing the key 7 and then the key 4 terminates Freeze status
The monitor image is static, System flashes (strobe)	A split screen mode that shows the entire reference image may be set	Press the key 7 to show the status line (in status line Position 3) Set the Split screen mode to "**–**" with the key 5
The monitor has a dark or static image and there is no flash	No synchronization signals	Check the synchronization signals *5.10.15 Synchronization inputs* (see *Fig. 8.3, page 8-8*)
The colour reproduction does not match the colour of the material	Calibration of the image sensor has not been performed, or it was too long ago	Perform calibration: see *4.15.25 Black and white level calibration, page 5-3*
	Monitor cable: a wire is defective (the test image is not correctly displayed in the *4.15.20 Gamma value* menu item)	Replace the cable
Colour reproduction is too dark	The strobe lamp may be defective or too old	The strobe lamp must be replaced
Image is not sharp with zoom IN and iris open	The exposure setting that was selected may not be suitable. If the iris is completely open, the reduction in the depth sharpness may cause the image to lose sharpness.	Key 1 – iris control: Increase the digital gain by one level and adjust the iris to match the new light conditions (reduce it somewhat)

Table 8.1: Image reproduction

Error symptoms	Possible causes of errors	Solution
It is not possible to reproduce the image so it is sharp	The distance from the InPrint system to the material web is incorrect	Correct the positioning track mounting according to the installation drawing
The image is focused at one setting on one side of the positioning track and at another on the other side	The positioning track was not aligned properly or the distance between the InPrint system and the material web is different on the right than on the left	

Synchronization

Table 8.2: Synchronization

Error symptoms	Possible causes of errors	Solution
Gear tooth sensor: The image position is not stable	The distance between the tooth wheel and the sensor is not correctly adjusted	See *Adjustment, page 4-7*
Gear tooth sensor: The image position is not stable. The gear wheel is not in direct contact with the print cylinder	The ratio between the print image and the sensor signal is not optimal	Extend repeat setting *(4.20.10 Teeth/repeat (gear tooth sensor), page 5-2)* Double or triple the number of teeth and then increase or reduce it by 1
		Install KT-5 in addition to improve synchronization with the sensor combination See *KT-5 image mark sensor, page 4-8*
Gear tooth sensor / sensor combination: High speed, inaccurate synchronization	If the duty cycle of the gear tooth sensor is not at an optimum setting, synchronization at high web speeds may be lost or may result in errors when images are taken.	*Page4-7 4.15.05 Gear tooth sensor* Check whether the bar is in the white area. Otherwise adjust again (see Section *Gear tooth sensor HDI-1, page 4-6*)
Image mark sensor: Image unstable	Sensor is detecting unfavourable edges	Change the position of KT-5 or readjust (see the operating instructions for the KT-5 in the system documentation)
	Speed is not constant; there is frequent acceleration	*4.20.30 Turn on compensation of acceleration*
		Additional gear tooth sensor HDI-1, to improve synchronization, see *Sensor combination, page 4-9*
Image unstable	Distance between camera head and synchronization sensor is too great	Install the synchronization sensors close to the InPrint system
	Slip between material web and synchronization sensor	Install the sensor where the slip in the web material is at its least

Table 8.2: Synchronization

Error symptoms	Possible causes of errors	Solution
Image mark sensor/ Sensor combination: No image taken at the higher print system speed	The image mark is not long enough to be detected at these speeds	Align the image mark sensor to a suitable image mark or print edge in the image (see also *Length of image mark, page 9-5*)
Image sensor/sensor combination: Synchronization is less precise at lower speeds	This is a characteristic of the InPrint system	The only way to achieve greater accuracy is with a more constant speed for the print system
Rotary encoder: No synchronization	The number of measured encoder pulses (*5.10.20 Encoder pulses*) does not match the rotary encoder specification. Please note! The number of increments displayed can be affected by the divider setting (*4.20.20 Divider*).	Check the electrical connections of the rotary encoder and rotary encoder cable
Rotary encoder: Image position is not perfect (unsettled image)	If a rotary encoder is used that was not obtained from Fife-Tidland GmbH, it may happen that the Synchronization signals of both inputs are identical in phase. The result of this may be an unstable image.	Reverse the signal polarity of one or both signals (Repeat or Speed)

Miscellaneous

Table 8.3: Miscellaneous

Error symptoms	Possible causes of errors	Solution
The motorised InPrint system cannot be moved on the positioning track or it moves out beyond the end marks	Limit switch adjustment is incorrect; connector not screwed in correctly (X1)	Check the cable on X1. Check the limit switch adjustment and readjust if necessary *4.15.10/4.15.15 Adjusting limit switches*, page 4-9*
The motorised InPrint system will not move on the positioning track	One of the motor control cables may not be screwed in correctly (X3 / X4)	Check the cable, Check the *5.10.25 Devices connected to CAN bus* menu to see whether motor is checked
	For safety reasons, the camera cannot be moved with the camera keyboard	Use external keyboard
A mode cannot be selected (Operating mode, Split screen mode, Exposure mode)	No corresponding mode has been activated	Activate the desired mode See Section *5 Set-up*
External keyboard does not respond	External keyboard may be incorrectly connected	Check the cable connections; If there are a number of external keyboards, check whether the terminating keyboard device is present. Check the *5.10.25 Devices connected to the CAN bus* menu to determine whether all connected keyboards have been entered
Image jumps when there is motion up/down	The step width may have been set incorrectly or the lens may be zoomed very wide	*3.05 Scroll increment, page 5-15* Reduce value
Non-motorised InPrint system: Autoscan mode is selected, but no motion is detected	Scan mode may not beset to “Repeat scan”. This is the only mode permitted by the non-motorised InPrint system.	See *3.xx.10 Scan mode*, page 5-18* Select “Repeat scan”
Lens cannot be controlled well	The setting selected for moving speed was not a good one. The zoom and focus control may vary from one lens to the next.	See *4.15.30.05 Zoom PWM, page 5-26* and *4.15.30.10 Focus PWM, page 5-26* Change values
Range of brightness differs significantly from the original	The Gamma setting may be incorrect	Check *4.15.20 Gamma value, page 5-4*

Table 8.3: Miscellaneous

Error symptoms	Possible causes of errors	Solution
Error display !01 or !02 in the status line	There is a hardware error in image memory.	Contact Service Department
Left/right, up/down key assignment incorrect		See *4.10 Arrow key functions, page 5-6* Left/right, up/down can be exchanged
Forgot password		Contact Service Department

5.10.15 Synchronization inputs

Menu

To select the *5.10.15 Synchronization inputs* menu:

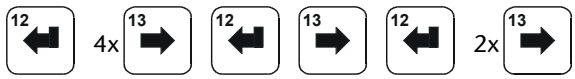


Fig. 8.1: Keystroke sequence to Menu 5.10.15 Synchronization inputs

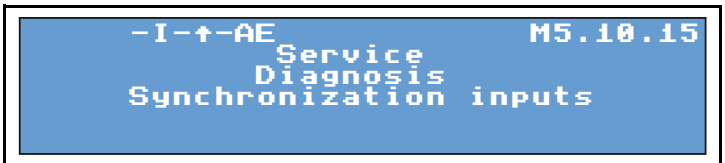


Fig. 8.2: Menu 5.10.15 Synchronization inputs

Enable the selected menu

Display

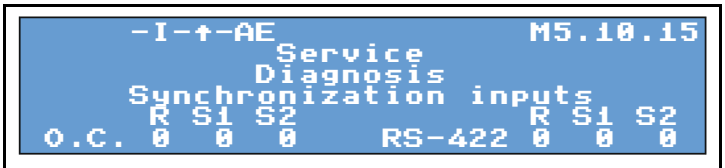


Fig. 8.3: Menu 5.10.15 Synchronization inputs - display

Table 8.4: Explanation of abbreviations

Abbreviation	Explanation
O.C.	Open-Collector
RS-422	RS-422 connection
R	Repeat
S1	Speed 1
S2	Speed 2

Note:
Because of the high signal frequency, not every pulse is displayed.

9 TECHNICAL DATA

General

Input power to power supply unit	115V/230V, 50Hz/60Hz
Power consumption 24V	InPrint (manual): <2A InPrint (motorised): <3A (1 strobe lamp) Additional strobe lamp: <1A Internal fuse: 5A slow-blow
Weight	**Manual:** Camera without traverse: 5,1kg Camera with manual positioning track and 1m length without cable chain: ca. 11kg Camera with manual positioning track and 1m length with cable chain: ca. 15kg **Motorised:** Camera without traverse: 7kg Camera with motorised positioning track and 1m length without cable chain: ca. 13kg Camera with motorised positioning track and 1m length with cable chain: ca. 17kg
Protection type	IP 30
Ambient conditions	+5°C ... +45°C, max. 90% relative humidity, non-condensing The maximum permissible temperature must be reduced starting at a height of 1000m above sea level: 45°C to 1000m 42°C to 2000m 39°C to 3000m. Optical components must not get dirty.
Positioning unit	positioning track: max. length 4000mm (with single-side mounting: max. length 1000mm) Moving speed: max. 90mm/s

Monitor	17″ CRT monitor (19″ and 22″ CRT monitor or 15″ and 21″ LCD monitor optionally available)
Camera	High-resolution RGB image sensor with 30-bit colour resolution and processing. Up to 8 images taken per second. SVGA output with 800x600 pixel resolution at a refresh rate of 72images per second. Motorised setting for iris, focus and zoom. 24x zoom range (optical 9x and digital 2.67x).
Field of view	Standard: max. 100x75mm, min. 4.2x3.1mm Extended: max. 200x150mm, min. 8.3x6.3mm
Magnification	on 17″ monitor: Standard: 3x to 75x Extended: 1.5x to 37.5x
Strobe head	Long-life xenon strobe lamp
Synchronization sensor	HDI-1 gear tooth sensor (standard), Optional: optical rotary encoder, KT-5 image mark sensor EEX rotary encoder or EEX gear tooth sensor

Inputs and outputs

X1: limit switches 1 and 2

X2: 24V (max. 5m)

X3: 24V power supply for motor / CAN bus (max. 5m)

X4: motor cable

X5: synchronization sensor:

- HDI-1: cable length max. 50m
- KT-5: cable length max. 50m
- encoder: cable length max. 30m

X6: monitor (15-pin sub-D (max. 30m))

see also *Fig. 1.1, page 1-3*

Synchronization signals

X5 pin assignment

Pin	Description
A	+12V (max. 200mA)
B	Reserved
C	Speed Control (Open Collector)
D	Reserved
E	Reserved
F	Repeat Control (Open Collector)
G	Speed Control (RS-422) +
H	Speed Control (RS-422) -
J	Repeat Control (RS-422) +
K	Repeat Control (RS-422) -
L	GND
M	GND
Housing	Shield

Electrical characteristics

Open-Collector

Signal level LOW	0V ... 3V
Signal level HIGH	Open
Max. current	-10mA

Push/Pull

Signal level LOW	0V ... 3V
Signal level HIGH	8V ... 24V
Max. current	-10mA/+0.1mA

Synchronization occurs on the falling signal edge.

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RS-422 (in conformity with the EIA standard)

Common mode voltage	$-7V < V_{CM} < 7V$
Min. difference in voltage	±200mV
Max. current	±10mA
Typical input hysteresis	±60mV
Termination	120Ω

Synchronization occurs on the rising signal edge in reference to the "+" channel or on the falling signal edge of channel "-".

Dynamic properties

Rotary encoder

Min. pulse width (Repeat Control)	3.33µs
Max. frequency (Speed Control)	150kHz
Signal ratio	1 ... 32767 pulses per image
Optimal signal ratio	Rotary encoder with 1000 increments

Gear tooth sensor

Max. frequency	150kHz
Signal ratio	1 ... 32767 pulses per image

Image mark sensor

Min. pulse width	0.37ms
Signal ratio	1 ... 64 image marks per image

Sensor combination

Min. pulse width	0.37ms
Max. frequency	150kHz
Signal ratio (Repeat Ctrl)	1...64 images marks per image
Signal ratio (Speed Ctrl)	1 ... 32767 pulses per image

Length of image mark

The minimum length of the image mark, l_{min} that can still be detected at a given web sped can be calculated as follows:

$$\frac{l_{min}}{\text{mm}} = \frac{1}{162} \times \frac{v_{max}}{\text{m/min}}$$

Example

At a web speed of 600 metres per minute, the length of the image mark must be at least 3.7 millimetres to be detected.

Standards and regulations

The InPrint web inspection system was designed and built in accordance with the standards and regulations of the European Union.

A declaration of conformity is available on file in accordance with:

- 73/23/EEC
- 89/336/EEC

The InPrint web inspection system has been certified according to the following standards:

- DIN EN 61000-6-2
- DIN EN 61000-6-4

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11 SERVICE

Requests for Service

When requesting service, please have a copy of the order confirmation ready with the order number.

When ordering replacement parts, please indicate, (where possible) Part Number, Drawing Number and Model description.

Please be careful to keep all documents accompanying the product in a safe place. This will allow us to help you more quickly in the event that service is required.

Addresses

To request service, or if you need replacement parts, please contact one of the following addresses.

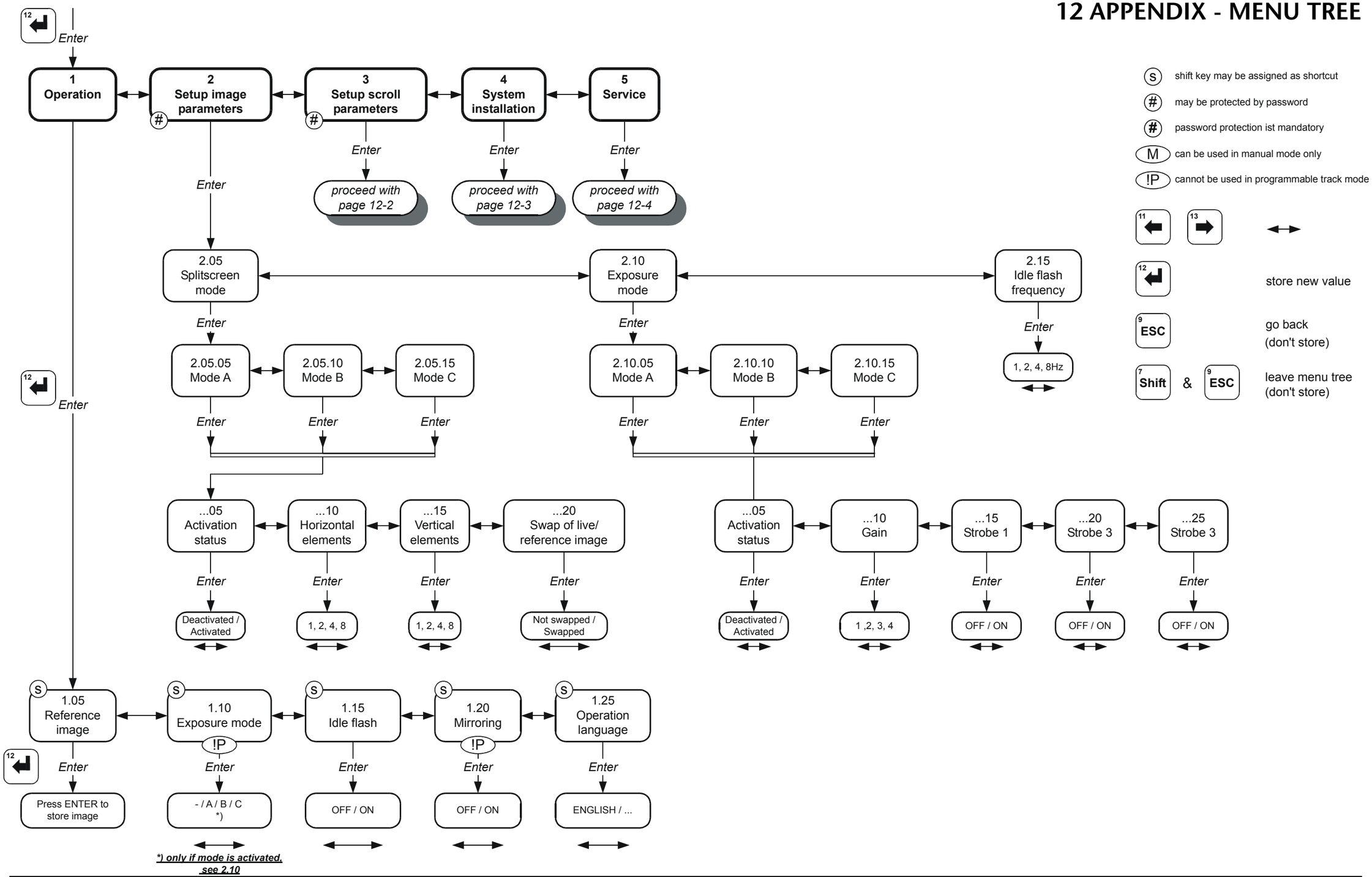
Fife-Tidland GmbH
Fifestraße 1 - 65779 Kelkheim - Deutschland
Siemensstraße 13-15 - 48683 Ahaus - Deutschland
Telefon: +49 - 6195 - 7002 - 0
Fax: +49 - 6195 - 7002 - 933

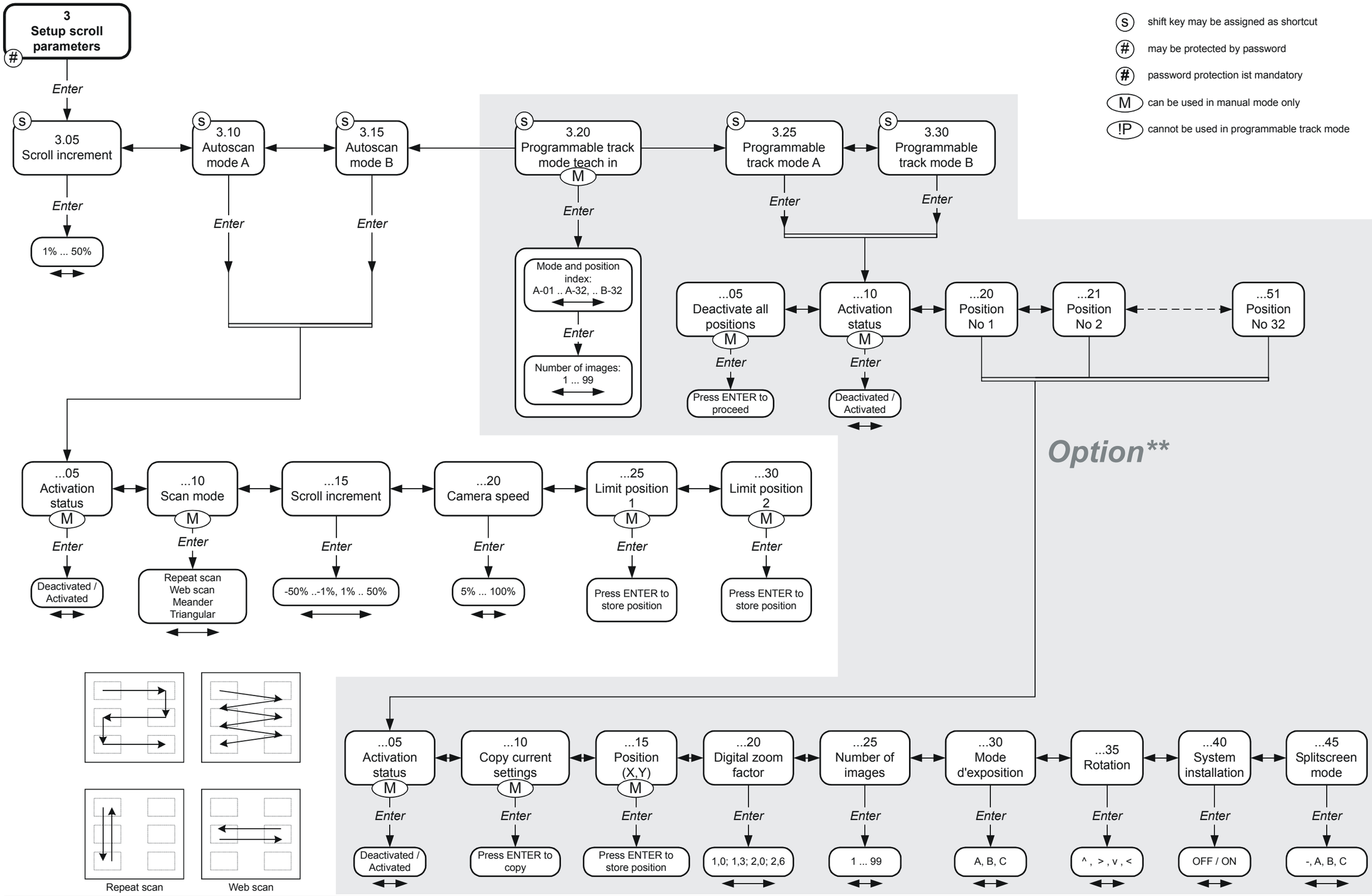
Fife-Tidland (UK) Ltd.
70-72 Manchester Road
Denton / Manchester, M34 3PR - Great Britain
Telefon: +44 - 161 - 320 - 2000
Fax: +44 - 161 - 320 - 4513

FIFE Corporation
Post Office Box 26508
Oklahoma City, OK 73126, USA
Telefon: +1 - 405 - 755 - 1600
Fax: +1 - 405 - 755 - 8425

FIFE Japan Ltd.
328-1 Sanno-cho, Inage - Ku
Chiba City, Chiba Pref. 263, Japan
Telefon: +81 - 43 - 421 - 1622
Fax: +81 - 43 - 421 - 2895

12 APPENDIX - MENU TREE





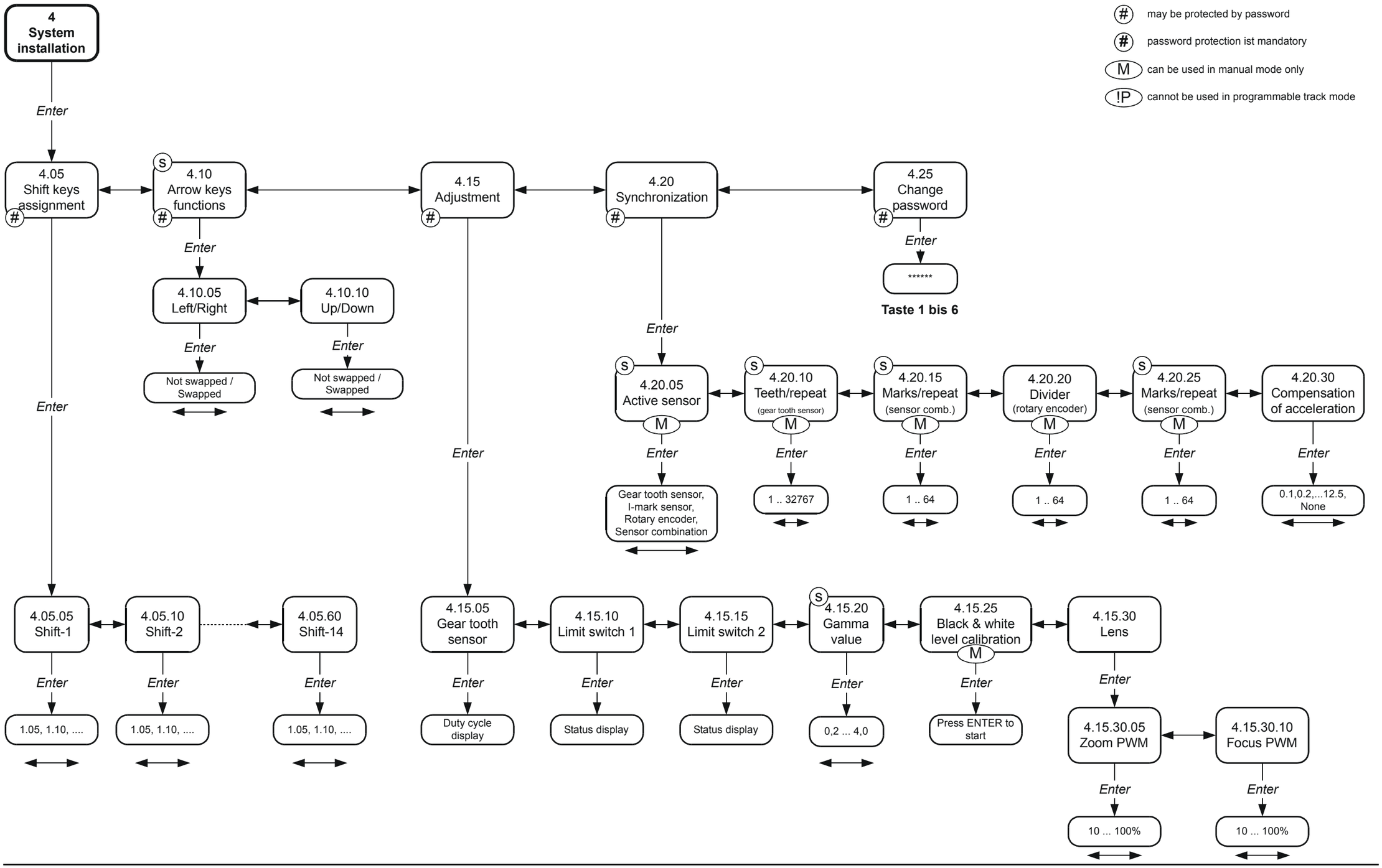
S shift key may be assigned as shortcut

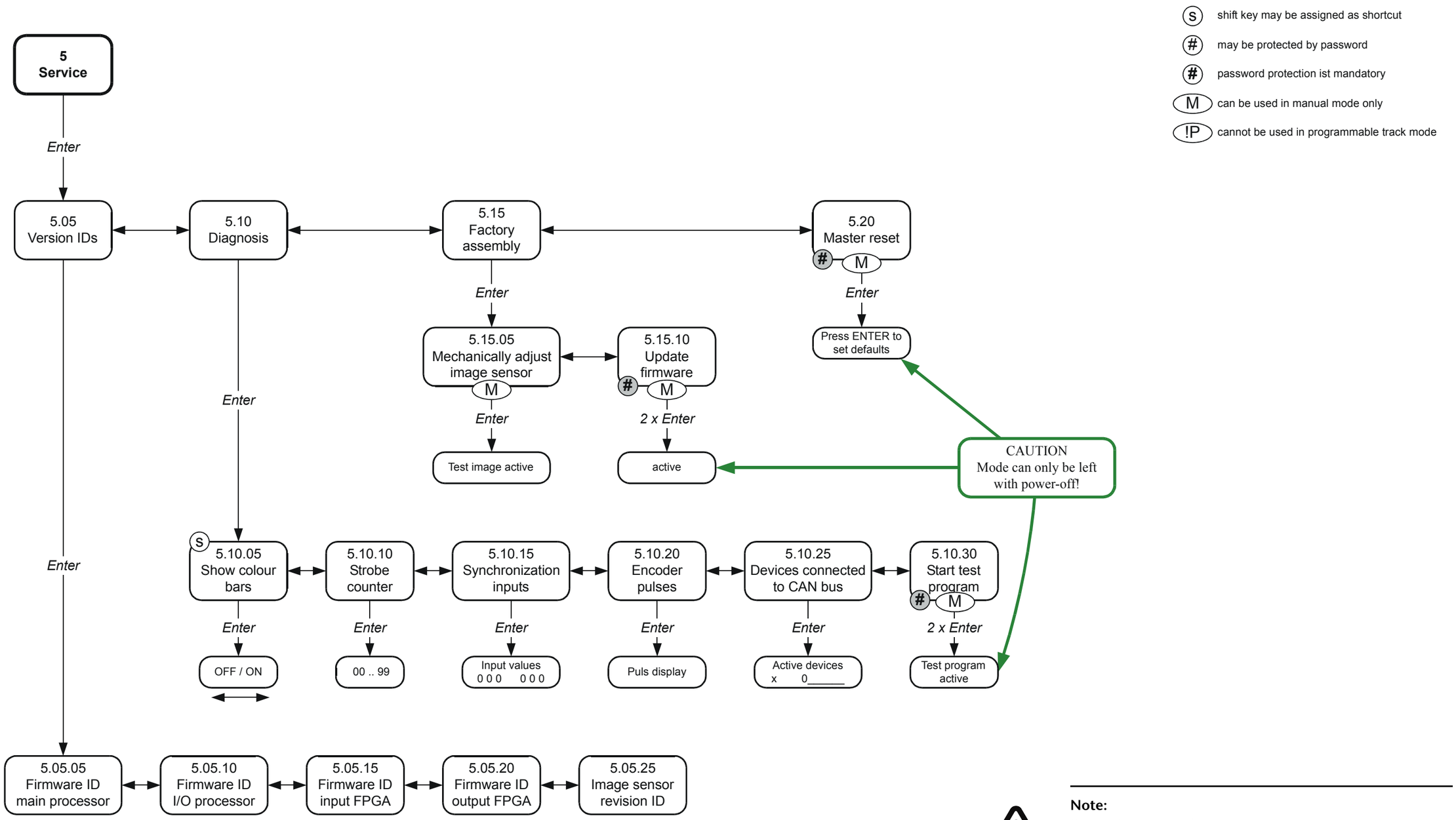
may be protected by password

password protection ist mandatory

M can be used in manual mode only

!P cannot be used in programmable track mode


(S) shift key may be assigned as shortcut
(#) may be protected by password
(#) password protection ist mandatory
(M) can be used in manual mode only
(!P) cannot be used in programmable track mode
4 System installation
Enter
4.05 Shift keys assignment (#)
4.10 Arrow keys functions (S) (#)
4.15 Adjustment (#)
4.20 Synchronization (#)
4.25 Change password (#)
Enter
******
Taste 1 bis 6
Enter
4.10.05 Left/Right
4.10.10 Up/Down
Enter
Not swapped / Swapped
Not swapped / Swapped
Enter
4.20.05 Active sensor (S) (M)
4.20.10 Teeth/repeat (gear tooth sensor) (S) (M)
4.20.15 Marks/repeat (sensor comb.) (S) (M)
4.20.20 Divider (rotary encoder) (M)
4.20.25 Marks/repeat (sensor comb.) (S) (M)
4.20.30 Compensation of acceleration
Gear tooth sensor, I-mark sensor, Rotary encoder, Sensor combination
1 .. 32767
1 .. 64
1 .. 64
1 .. 64
0.1,0.2,...12.5, None
4.05.05 Shift-1
4.05.10 Shift-2
4.05.60 Shift-14
1.05, 1.10, ...
1.05, 1.10, ...
1.05, 1.10, ...
4.15.05 Gear tooth sensor
4.15.10 Limit switch 1
4.15.15 Limit switch 2
4.15.20 Gamma value (S)
4.15.25 Black & white level calibration (M)
4.15.30 Lens
Duty cycle display
Status display
Status display
0,2 ... 4,0
Press ENTER to start
4.15.30.05 Zoom PWM
4.15.30.10 Focus PWM
10 ... 100%
10 ... 100%



Note:
Some of the menu items on this page are not described in these operating instructions because they are not necessary for normal operation of the InPrint system.